iCONYX

OWNERS MANUAL

Assembly
&
Installation Instructions

Beamware 2

RENKUS-HEINZ
FOR A BETTER SOUNDING WORLD

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions
5. Do not use this apparatus near water. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on it.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Make sure the power cord remains readily accessible at all times.
12. The AC Power Cord is the AC Mains disconnect.
13. Only use attachments/accessories specified by the manufacturer.
14. Disconnect this apparatus during lightning storms or when unused for long periods of time.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

"WARNING - TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE"

"CAUTION: THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO".

Explanation of Graphical Symbols
The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the use to the presence of uninsulated "dangerous Voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The exclamanation point,within an equilateral triangle is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Erklärung der graphischen Symbole
Der Blitz mit nach untenzielendem Pfeil in einem gleichseitigen Dreieck weist den Benutzer auf das Vorhandensein einer unisolierten, "gefährlichen Spannung" im Gehäuse hin, die stark genug sein kann, einer Person einen gefährlichen elektrischen Schlag zu versetzen.

Das Ausrufezeichen in einem gleichseitigen Dreieck weist den Benutzer auf wichtige Betriebs- und Wartungsvorschriften in den beiliegenden Unterlagen des Gerätes hin.

CAUTION

RISK OF ELECTRIC SHOCK: OPEN ONLY IF QUALIFIED AS SERVICE PERSONNEL

To reiterate the above warnings: servicing instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than that contained in the Operation Instructions unless you are qualified to do so. Refer all servicing to qualified personnel.

VORSICHT

GEFAHR EINES ELEKTRISCHEN SCHLAGES: NUR VON QUALIFI IEREM WARTUNGSPERSONAL U FFNEN

Eindrigliche Warnung: Wartungsvorschriften dienen nur der Benutzung durch qualifizieres Personal. Zur Vermeidung eines elektrischen Schlages keine anderen als die in den Betriebsvorschriften beschriebenen Wartungsarbeiten ausführen, es sei denn Sie sind dafür qualifiziert. Wartungsarbeiten sind nur von qualifiziertem Wartungspersonal auszuführen.

IMPORTANT

Your Iconyx Steerable Column Loudspeaker contains no user-serviceable parts and all service should be referred to qualified service personnel.

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TECHNICAL SUPPORT

If you have a question about Steerable Column Loudspeakers or run into a problem using one of our ICONYX Steerable Column Loudspeakers,
call our technical support staff.

Phone: 949 588 9997
Monday through Friday between 8:00 AM and 5:00 PM Pacific Time.

Ask for:
Jim Mobley (Extension 104)
Jonas Domkus (Extension 135)

E-mail
jim@renkus-heinz.com
jonas@renkus-heinz.com

INTRODUCTION

Congratulations on your purchase of a Renkus-Heinz Iconyx Steerable Column Loudspeaker. We hope you enjoy it.

Your Iconyx Steerable Column Loudspeaker was carefully tested and inspected before leaving our factory and should have arrived in perfect condition. Please carefully inspect the shipping carton(s) and loudspeaker(s) for any noticeable damage, and if any damage is found, immediately notify the shipping company.

Only you, the consignee, may institute a claim with the carrier for any damage incurred during shipping. Be sure to save the carton(s) and all packing material for the carrier's inspection.

It is also a good idea to save the carton and packing material even though the loudspeaker arrived in good condition. If you should ever need to ship the loudspeaker, it should be shipped in its original factory packaging.

GENERAL INFORMATION

To simplify shipping and handling, ICONYX arrays are constructed from 8-channel or 16-channel modules and need to be assembled in the field. The assembly hardware is packed with the modules in cardboard box(es) that double as carton "fillers". The ones containing the hardware are marked "Hardware" to prevent their being accidently discarded.

If you purchased an **IC8** or **IC16/8**, all you need to do is remove the column loudspeaker and its hardware box from the carton and install it. Skip to page 9 for Address Number Verification instructions.

If you purchased an **IC16** or an **IC32/16**, you should have received two cartons (two 8-channel or 2-16 channel modules) and will need to assemble them into a 16- or 32-channel unit. Each carton will include a hardware box, but if you purchased an IC16 only the box in carton 1 will include hardware; the box in carton 2 will be empty. If you purchased an IC32/16, both boxes will include hardware.

If you purchased an **IC24**, you should have received 3 cartons (three 8-channel modules). The hardware boxes in cartons 1 and 2 will include hardware, while the box in carton 3 will be empty.

If you purchased an **IC32**, you should have received 4 cartons (four 8-channel modules) and will need to assemble them. The hardware boxes in cartons 1, 2 and 3 will include hardware; the box in carton 4 will be empty.

A detailed listing of the hardware supplied with each model follows on the next page. The cartons will be marked to show the modules' position in the finished column array; for example, top, bottom, center, etc.

In all cases, if you ordered a mounting hinge kit with the loudspeaker the female portions of the hinge assemblies will have been installed on the modules for you. The male portions of the wall mounting hinge assemblies will be packed in the hardware box(es). A dimensional drawing of the column array and paper mounting templates were included in the plastic bag that contained this manual.

Note that the male sections have been set up to allow the column to swing to the right away from the wall. If you want the column to swing to the left, you will need to change the location of the hinges from the right side of the wall mounting plate to the left side. Refer to the Installation section of this manual for more information.

Item Description	Model IC8 IC16/8	Model IC16 IC32/16		Model IC24			Model IC32			
	Box #1	Box #1	Box #2	Box #1	Box #2	Box #3	Box #1	Box #2	Box #3	Box #4
6-Foot power cord with IEC connectors Part # 722-YLC0004 Part # 722-YLC0005	1	1	-	1	-	-	1	-	-	-
3-pin Phoenix connectors (used for audio input connections Part # 722-TCF053	4	4	-	4	-	-	4	-	-	-
7-pin Phoenix connectors (used for data control connections Part # 722-TCF074	2	2	-	2	-	-	2	-	-	-
AC power jumper cables (3-conductor with Molex connectors) Part # 722-TCBL052	-	1	-	1	1	-	1	1	1	-
Data / signal jumper cable (15-conductor flat wire cable) with Amp connectors Part # 722-CBL051	-	1	-	1	1	-	1	1	1	-
Small 7/8 inch by 3 inch cover plates Part # 722-DCC039P	-	2	-	2	2	-	2	2	2	-
#4-40 x 1/4 inch philips head machine screws (used to secure the data/signal cable connectors) Part # 722-WSS081	-	4	-	4	4	-	4	4	4	-
M4 Philips flat head machine screws Part # 722-WSS0144	-	8	-	8	8	-	8	8	8	-
M5 Philips pan head machine screws Part # 722-WSS0103	-	4	-	4	4	-	4	4	4	-
Wall Mtg. hinge plates *(If hinge kit was purchased)* Plate - Part # 622-DCC019 Hinge Pin - Part # 622-DCC027W Arm - Part #600-DCC004	2	2	1**	2	1	-	2	1	-	-

** Only if IC32/16 was purchased.

ASSEMBLY INSTRUCTIONS

In the following instructions, the term “module” is used to refer to one of the 8-channel sections of the finished assembly, which is called a column or a column array.

1. Prepare an assembly area. Each module is a little over 3 feet long, so you need a flat surface at least 6 feet long to assemble an IC16 or IC16/8, 9 feet long for the IC24 and 12 feet long for the IC32 and IC32/16.

2. We suggest covering the assemly area with a heavy cloth or some other soft material to prevent damaging the finish on the cabinets while assembling them.

3. Avoid resting the modules on their grille. The modules are heavy and may deform the grille. Instead, rest the modules on their sides or back.

4. Place the modules in their respective positions on the assembly area.
   Hint: The lower end of each module is the end of the module with the access plate for the power cord, input connections and programming cable. In the graphic shown below the access plates were removed for illustration purposes.

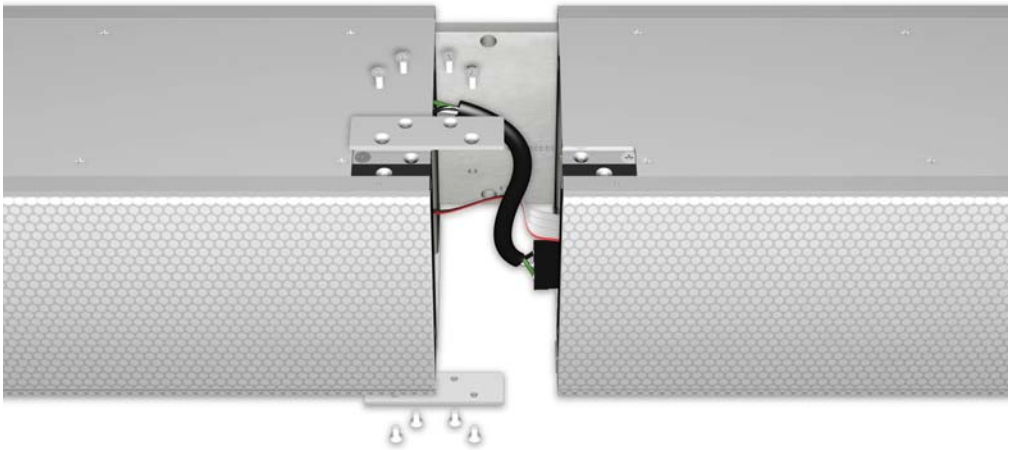
5. Align the two columns to be joined on a tabletop or on the floor so that the top of the lower one and the bottom of the upper one are close to one another, say 4” (10 cm) apart. See below.

6. Loosen the screws that are holding the heavy joining plate in place. You will not be able to bring the two modules together unless these screws are loose.

7. Move one module somewhat to the side so you can get at the ends with a small screwdriver.

8. Into the end of each module connect the short 3-conductor AC cable. It only goes into the sockets one way and the cable is reversible. Make sure each end is firmly seated and a click is heard when inserting the plug. Caution: For safety, use only the interconnection cable supplied by Renkus-Heinz.

9. Into the end of each module connect the short 15-conductor ribbon cable. It only goes into the sockets one way and the cable is reversible. It does not matter which end goes into which module. Caution: for safety, use only the interconnection cable supplied by Renkus-Heinz.Using a small Philips screw driver, secure the connector on each end of the ribbon with two 4-40 Philips head screws (supplied). Make sure the connectors are fully seated. You should hear a click when they seat. If necessary, use a flashlight to check because if the connectors are not seated properly, you may have to disassemble the column again in order to seat them correctly.

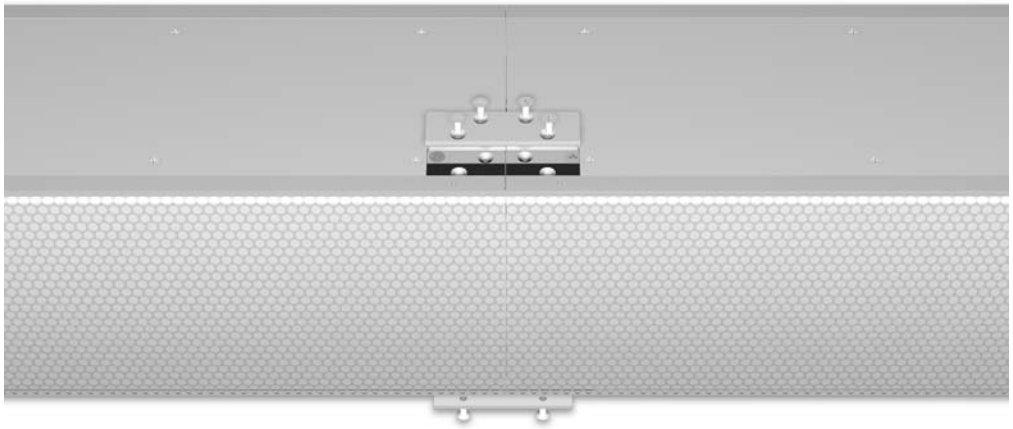


11. Align the two modules and slide them together, making sure the holes in the heavy joining plate align with the holes in the modules.

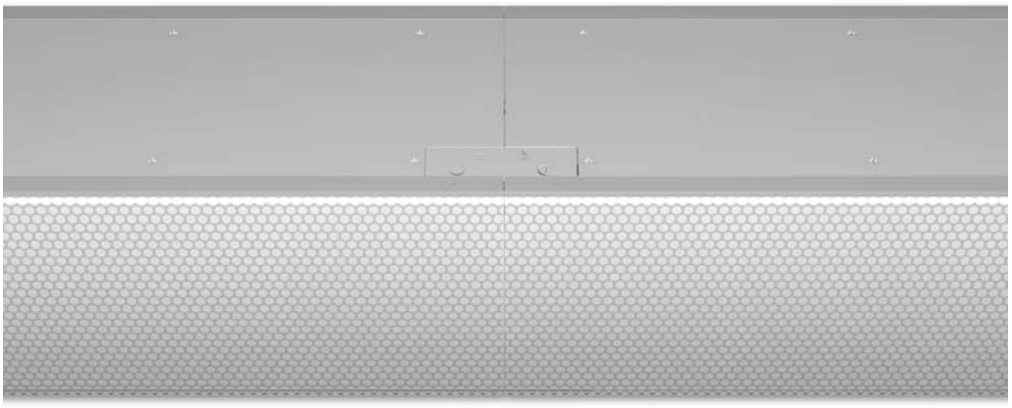
12. Install the remaining joining plate screws and snug them reasonably tight.

13. Turn the assembly on its rear and install the small coupling bars.

Note: If you are assembling an IC24. IC32 or IC32/16 with hinges, verify that the center join ing plate with a hinge on it is located in the best spot for the installation. If it isn't, now is the time to move it to another location.



14. The last step is to finish tightening the screws that hold the heavy joining plate in place. Turn the assembly on its side and tighten the screws.



15. If you are assembling an IC24, IC32 or IC32/16, repeat the assembly procedure until all the modules are joined together into one assembly.

ADDRESS NUMBER VERIFICATION

1. Iconyx steerable column loudspeakers are digitally controlled and each 8-channel module must have a separate and distinct address number. The address number for each module is set using a BCD (Binary Coded Decimal) coding system and 8 on/off dip switches. The switches are located behind each module's rear access plate.

The switches are set at the factory based on the size and quantity of steerable column loudspeakers ordered. You may want to check and record these settings before installing the loudspeakers. It is a lot easier to do it now than it will be after the loudspeakers are installed.

2. Remove the access plate(s) and locate the switches. Each 8-channel module will have an access plate.

Notice that there are 8 orange on/off Dip switches. Switches 1 to 4 are labeled as "ONES" and switches 5 to 8 are labeled "TENS". The switches are "on" when set to the position closest to the numbers and "off" (--) when set to the other position.

The switch settings for modules 1 to 16 follow:

	Switch Number							
Module Number	1	2	3	4	5	6	7	8
1	ON							
2		ON						
3	ON	ON						
4			ON					
5	ON		ON					
6		ON	ON					
7	ON	ON	ON					
8				ON				
9	ON			ON				
10					ON			
11	ON				ON			
12		ON			ON			
13	ON	ON			ON			
14			ON		ON			
15	ON		ON		ON			
16		ON	ON		ON			

The switch settings for modules 17 to 32 are:

17	ON	ON	ON		ON			
18				ON	ON			
19	ON			ON	ON			
20						ON		
21	ON					ON		
22		ON				ON		
23	ON	ON				ON		
24			ON			ON		
25	ON		ON			ON		
26		ON	ON			ON		
27	ON	ON	ON			ON		
28				ON		ON		
29	ON			ON		ON		
30					ON	ON		
31	ON				ON	ON		
32		ON			ON	ON		

3. Common practice is to number the 8-channel modules consecutively starting at 01 with the bottom module. In an IC32, for example, the bottom module would be 01 and the ones on top of it numbered 02, 03 and 04. If the system had two IC32's, the second IC32 would have its modules labeled 05, 06, 07 and 08 with number 05 being the bottom module.

SOFTWARE INSTALLATION & SETUP

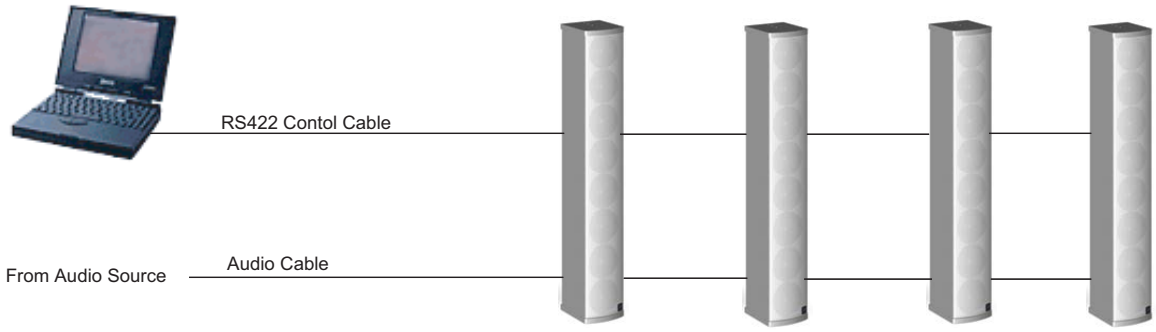
Iconyx steerable column loudspeakers are digitally controlled and a PC with appropriate software is needed during installation and setup. Once the setup is completed the PC is no longer needed unless the system parameters need to be adjusted or changed.

The Iconyx software requires a PC meeting at least the following basic requirements:

Processor Speed:	800 MHz Pentium or higher
Memory:	256 MB or higher
Interface:	At least one available USB port compliant with USB1.1
Operating System:	Windows 2000 SP4 or Windows XP SP1 or higher
Operating System Add-Ons:	.NET Framework (provided with the Iconyx software)
Screen Resolution:	1024 x 768 or higher
Browser:	Internet Explorer v5.0 or higher

Note that Windows 95 and Windows 98 are not supported.

A typical system layout is shown below.



Notes:

1. The Audio Cable is a conventional twisted-pair shielded audio cable. It terminates in a 3-pin Phoenix connector and loops from column to column; looping Phoenix connectors are provided on each column. 1.0 V is required for rated power output. The column's input impedance is 10,000 Ohms balanced.

2. Since the Iconyx digital network uses a RS422 serial line for control, a USB to RS422 converter/adapter (Renkus-Heinz SETUP-IC) is needed to connect your computers USB out put to RS422. The USB to RS422 converter/adapter terminates in a 9-pin DB-9 connector. Each module provides a DB-9 connector plus a "looping' 7-pin Phoenix connector. Note that if you are using another USB to RS422 converter/adapter, it must have a communications speed of at least 9600 baud.

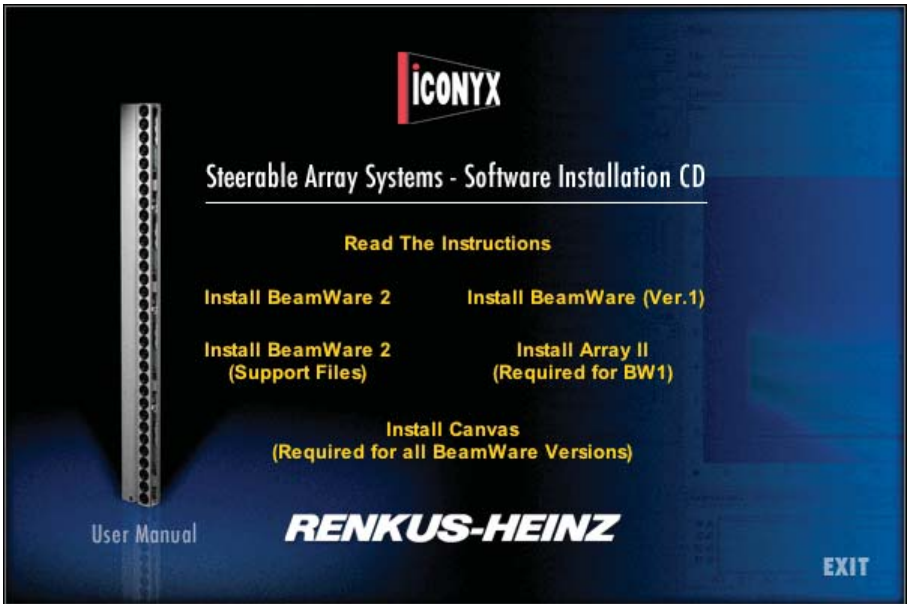
3. The system allows up to 8 columns (up to 32 modules) to be controlled from a single COM Port.

The Iconyx Software CD you received with your Steerable Column Loudspeaker includes the driver needed by the USB to RS422 adapter plus 2 software programs that need to be installed on your computer. These are:

1. BeamWare 2
BeamWare 2 is used to design the beam's shape and aiming and develop the FIR filters that control the beam's shape and aiming. It is also used to identify the arrays used in the system and to install in them the FIR filters that control their aiming.

2. Canvas
Canvas is used to adjust (fine tune) the level and EQ settings of the individual column arrays to optimize their performance. It is especially useful in multi-column distributed systems for balancing levels during final commissioning.

Inserting the Iconyx Software CD into the computer's CD-ROM drive will open the splash (menu) screen shown below.



INSTALLING THE USB TO RS422 ADAPTER DRIVERS

Normally the USB to RS422 adapter and serial extension cable is installed before any of the software programs. However, the USB to RS422 adapter and software programs can be installed in any order.

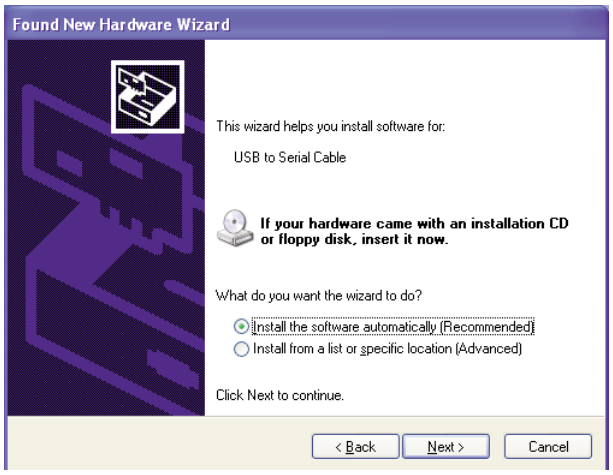
The USB to RS422 adapter is required for communications (data transfer) between the Iconyx column arrays and the Array II and Canvas software programs. The Iconyx Software CD includes the driver needed to install the USB to RS422 adapter. **Before starting the installation make sure the USB to RS422 converter and serial extension cable is not connected to any of the Iconyx column arrays.**

FOR WINDOWS XP USERS

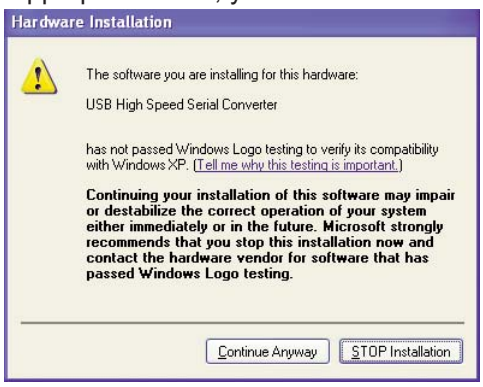
1. With the PC on and Windows running, insert the Iconyx Software CD into your CD drive. Connect

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

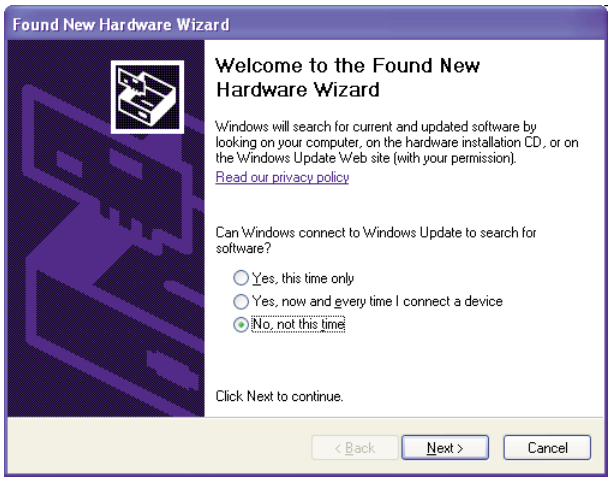
the USB to RS422 adapter to an available USB1.1 compatible USB port. Windows will prompt you with the following message. (If you do not receive this message window, skip ahead to page 17 and the section “If Windows Did Not Prompt To Install Drivers automatically).
Select the option to not search Windows Update by clicking on “No, not this time” and then on Next to continue.


Found New Hardware Wizard
This wizard helps you install software for:
USB to Serial Cable
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

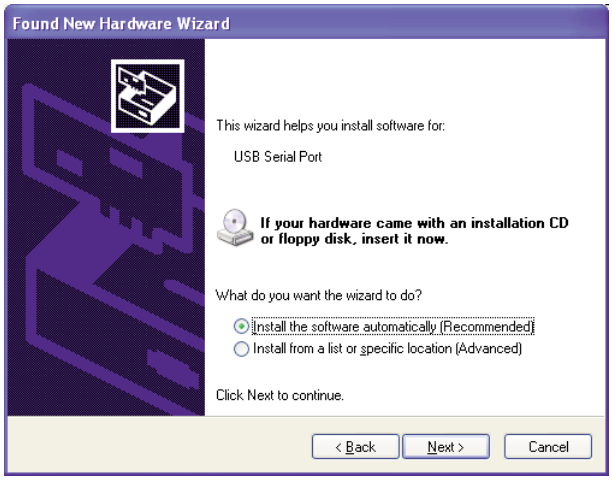
2. You will be prompted with the following "Found New Hardware Wizard" screen. Select "Install the software automatically (Recommended)" and click on Next. Windows will find the appropriate driver automatically.
3. After Windows finds the approprate driver, you will be notified that the driver has not passed


Hardware Installation
The software you are installing for this hardware:
USB High Speed Serial Converter
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

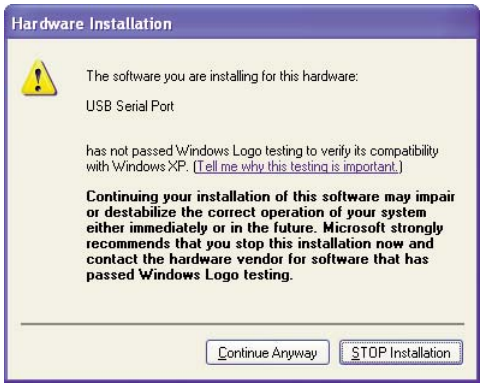
Windows Logo testing with the following message. Click on "Continue Anyway". Windows will finish the driver installation. Click on "Finish" when prompted.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

4. Windows will now find another hardware device, which is the Serial Port device of the adapter cable. Again you will be prompted with the option to search Windows Update. Click "No, not this time" and then Next to continue.


Found New Hardware Wizard
This wizard helps you install software for:
USB Serial Port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

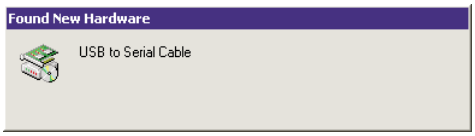
5. You will be prompted with the following screen. Click “Install the software automatically (Recommended)” and then click on Next. Windows will find the appropriate driver automatically.


Hardware Installation
The software you are installing for this hardware:
USB Serial Port
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

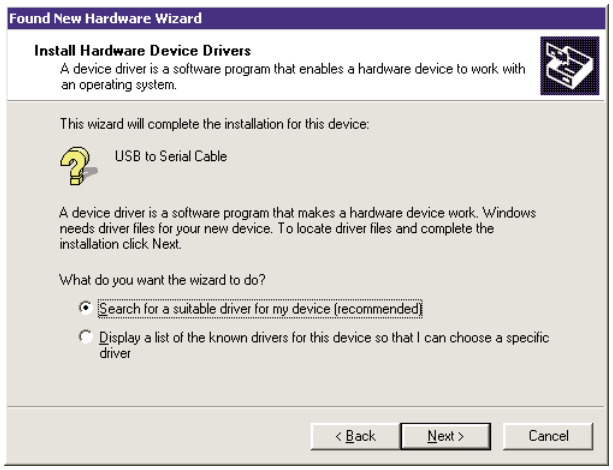
After Windows finds the appropriate driver, you will be notified that the driver has not passed Windows Logo testing with the following message. Click on “Continue Anyway”. Windows will finish the driver installation. Click “Finish” when prompted.
You have now completed the USB to RS422 adapter driver installation.

FOR WINDOWS 2000 USERS

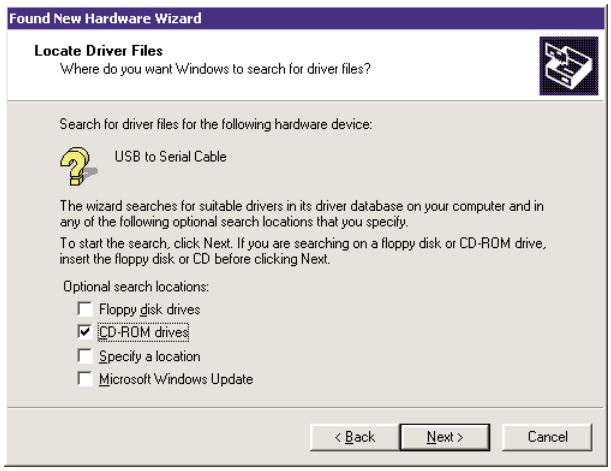
1. With the PC on and Windows running, insert the Iconyx Software CD into your CD drive. Connect the USB to RS422 adapter to an available USB1.1 compatible USB port. Windows will notify you that it has found new hardware (USB to Serial Cable) and start the Found Neww Hardware Wizard.



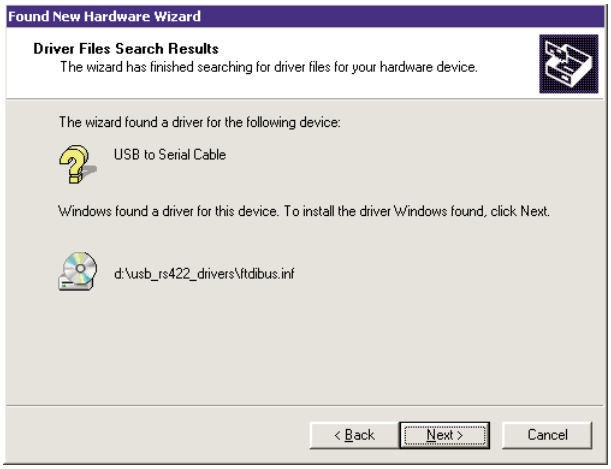
Click on Next to continue. (If you do not receive this message window, skip ahead to page 17 and the section “If Windows Did Not Prompt To Install Drivers automatically”).


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
USB to Serial Cable
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

2. You will be prompted with the following screen. Click “Search for a suitable driver for my device (Recommended) and then click on Next.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
USB to Serial Cable
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

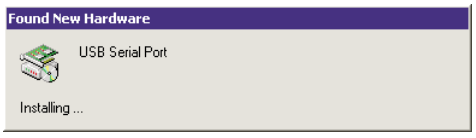
3. You will be prompted to search for the location of the drivers. Click CD ROM Drives, then click Next.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
USB to Serial Cable
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\usb_rs422_drivers\ftdibus.inf
< Back
Next >
Cancel

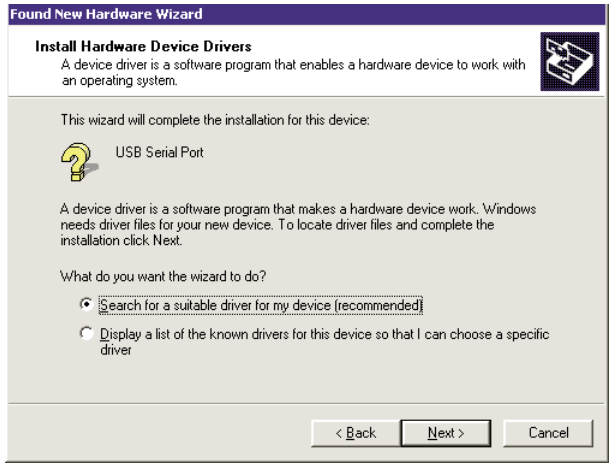
After Windows finds the appropriate driver, you will be prompted to install it, click on Next.

After Windows finishes installing the driver, click “Finish” when prompted.

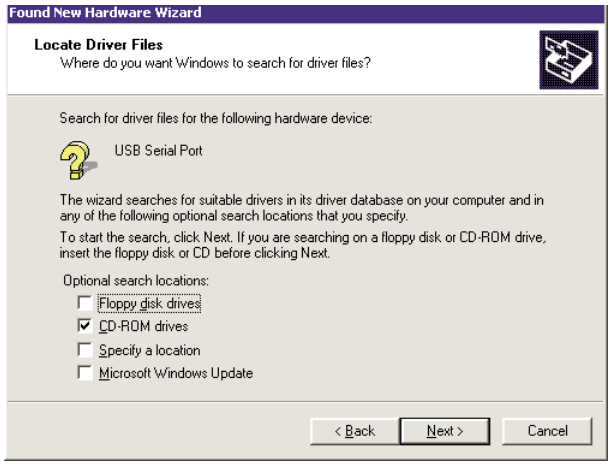
4. Windows will now find another hardware device, which is the Serial Port device of the adapter

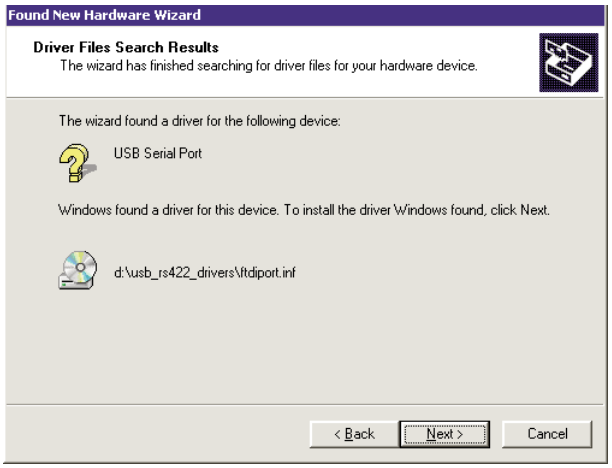


cable. Again, Windows will notify you that it found new hardware (USB Serial Port) and start the Found New Hardware Wizard. Click on Next to continue.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
USB Serial Port
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

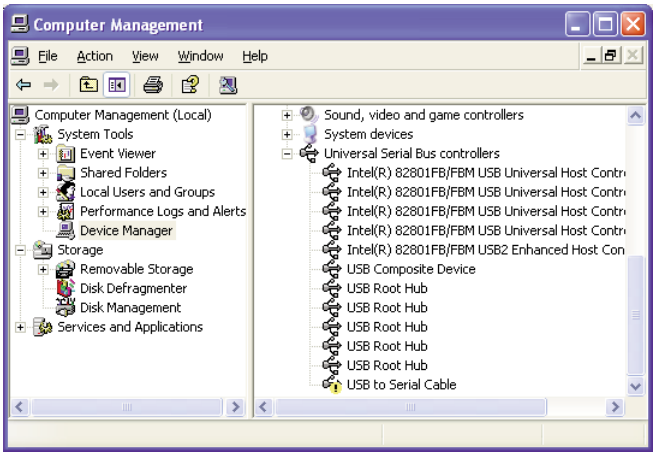
5. You will be prompted with the following screen. Click “Search for a suitable driver for my device (Recommended)” and then click Next.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
USB Serial Port
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
USB Serial Port
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\usb_rs422_drivers\ftdiport.inf
< Back
Next >
Cancel

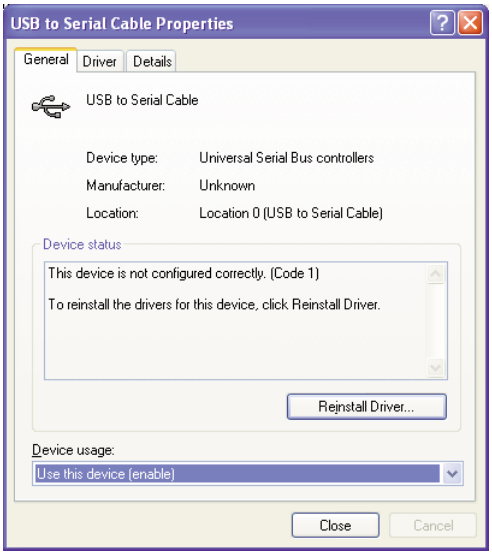
6. You will be prompted for a location to search for the drivers. Click CD ROM Drives, then click on *Next*. After Windows finds the approprate driver, you will be prompted to install it, click *Next*. After Windows finishes installing the driver, click on *"Finish"* when prompted. You have now finished the USB to RS422 adapter driver installation.

IF WINDOWS DID NOT PROMPT TO INSTALL DRIVERS AUTOMATICALLY



If Windows did not prompt you as in step 1, you will need to manually initate the driver installation. Open Device Manager (by Right-Clicking on MyComputer and selecting "Manage"). Click on the "Device Manager" icon and look for "USB to Serial Cable" with a yellow exclamation mark. You may find it under "Universal Serial Bus Controllers", "Other Devices", or "Unknown Devices".

Double click the USB to Serial Cable item, and click on "Reinstall Driver". Follow the instructions from Step 1.



INSTALLING BEAMWARE 2

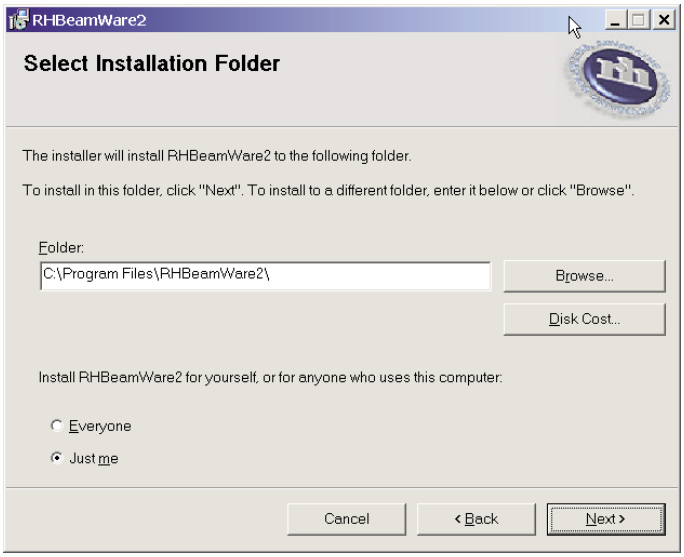
1. Click on the *Install BeamWare 2* button to open the BeamWare installer program and then double click on *setup.exe* to activate the installer..

If you have a previous version of BeamWare installed on your computer, you do not need to uninstall it before BeamWare 2. If you have an earlier version of Beamware 2 installed on your computer, a prompt will warn you that you must uninstall it using *Add/Remove Program.*

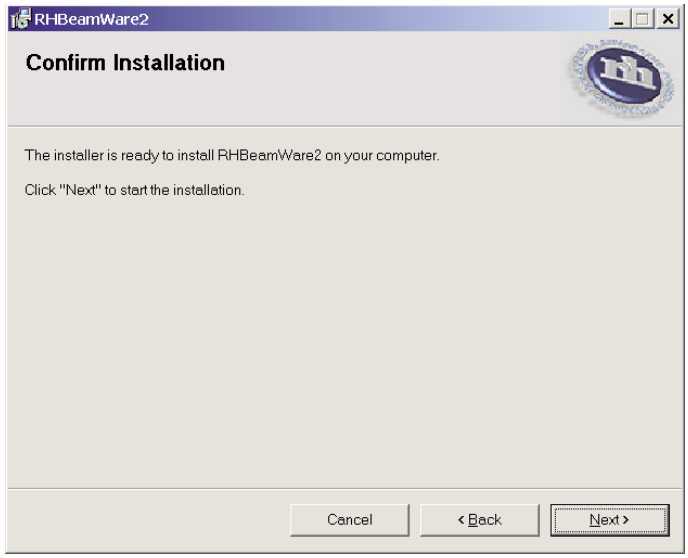
Beamware 2 requires that Microsoft's .NETFramework 2.0 or higher be installed on your computer, and if you do not have it installed on your computer will give you the error message shown below. You will need to install .NETFramework 2.0 or higher before proceeding. You may download .NETFramework 2.0 from that same location on our website as the Beamware 2 download or from Microsoft's download site (http://microsoft.com/downloads).

RHBeamWare2
Welcome to the RHBeamWare2 Setup Wizard
The installer will guide you through the steps required to install RHBeamWare2 on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

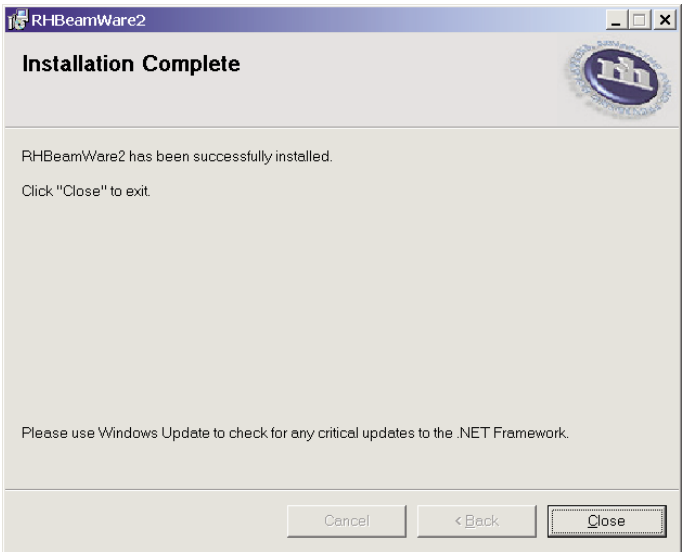
Click on *Next* to start the installer. This will open the Select Installation Window shown on the next page.


RHBeamWare2
Select Installation Folder
The installer will install RHBeamWare2 to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\RHBeamWare2\
Browse...
Disk Cost...
Install RHBeamWare2 for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

Notice that you are given the choice of limiting access to BeamWare 2 to just yourself or of giving access to anyone using the computer. Make your choice and then approve the suggested file location by clicking on *Next*.


RHBeamWare2
Confirm Installation
The installer is ready to install RHBeamWare2 on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

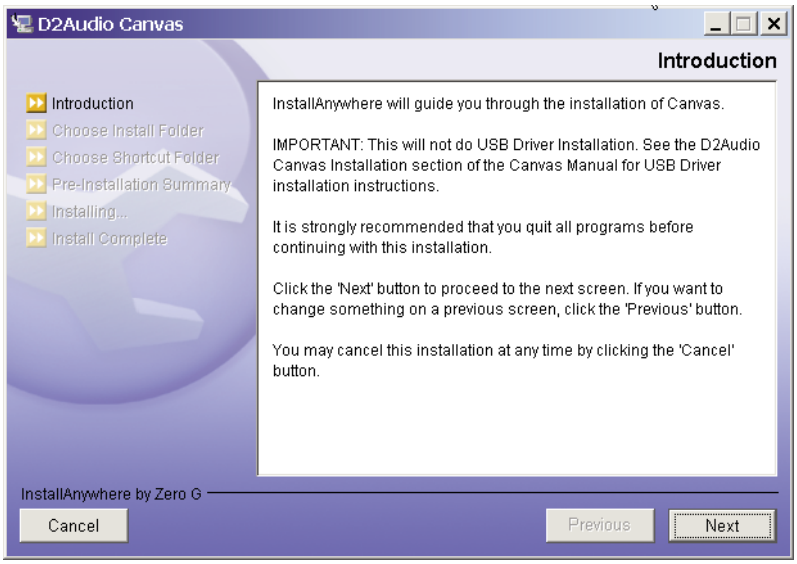
A Confirm Installation window will open. Approve the installation by clicking on *Next*. When the Installation Complete window appears, click on *Close* to exit the installer.



Notice that the installer placed a BeamWare 2 icon on your desktop.

INSTALLING CANVAS

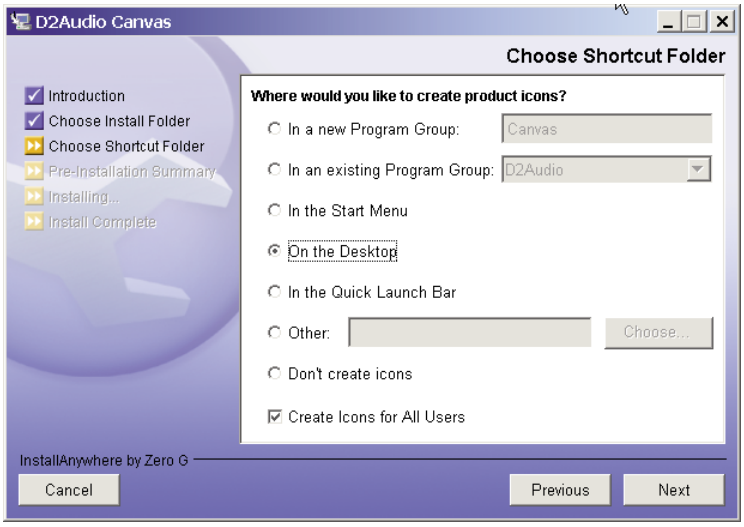
1. Click on the *Install CANVAS* button to activate the Canvas installer program.


D2Audio Canvas
Introduction
Introduction
Choose Install Folder
Choose Shortcut Folder
Pre-Installation Summary
Installing...
Install Complete
InstallAnywhere will guide you through the installation of Canvas.
IMPORTANT: This will not do USB Driver Installation. See the D2Audio Canvas Installation section of the Canvas Manual for USB Driver installation instructions.
It is strongly recommended that you quit all programs before continuing with this installation.
Click the 'Next' button to proceed to the next screen. If you want to change something on a previous screen, click the 'Previous' button.
You may cancel this installation at any time by clicking the 'Cancel' button.
InstallAnywhere by Zero G
Cancel
Previous
Next

A. Click on *Next.*

B. Approve the suggested file location by clicking on *Next*.

C. Select the Icon Option you wish to use and then click on *Next* to continue.



D. Click on *Install* to begin the installation.

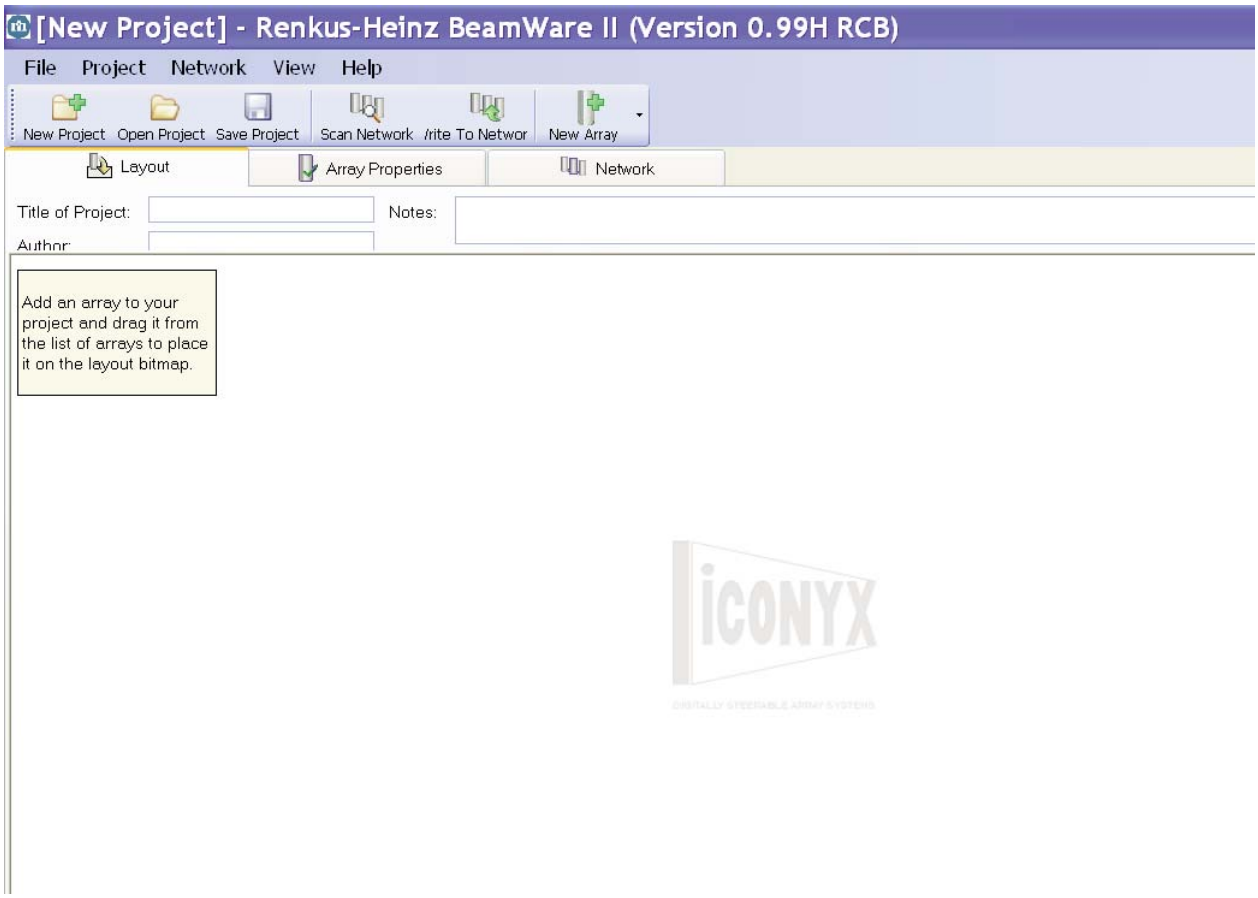
E. Click on *Done* to complete the installation

Notice that the installer will have placed a Canvas icon on your desktop if you elected that option.

USING BEAMWARE 2

One of the new features included in Beamware 2 is the ability to view the horizontal coverage of Iconyx arrays. Previous versions of Beamware were able to only display the vertical coverage. The horizontal coverage display enable you to quicky determine if a single Iconyx array will provide adequate horizontal coverage or whether more that one array will be needed.

To open Beamware 2, click on the RHBeamware 2 Icon the installer placed on your desktop. This will start Beamware 2. This will open the screen shown below.



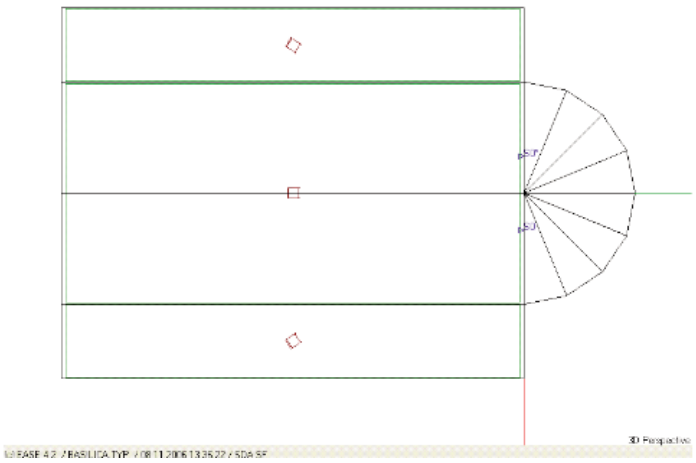
The first step in using Beamware 2 is to select and add a floor plan. A quick way to do this is to go to the Project pull down menu and select *Layout Presets*. Then choose one of the example floor plans.

You can also create your own floor plan and import it into the Project. All that is required is an outline drawing saved as a bmp, gif or jpg file. The file can be created in any drawing program that allows you to make a 2-D outline drawing and save it as a bitmap. AutoCad, CorelDraw, EASE and Adobe Illustrator are just a few of the program that can be used. Another way, if you have a scanner, is to sketch the outline on paper and then scan/save it as a bmp, gif or jpg.

To Import the drawing into the project go to the *Project* pull down menu and select *Import Layout Bitmap*. This will open an import screen that allows you to browse to the floor plan file you created and import it into the Project.

For our purposes we'll use a floor plan of the Basilica room from EASE..

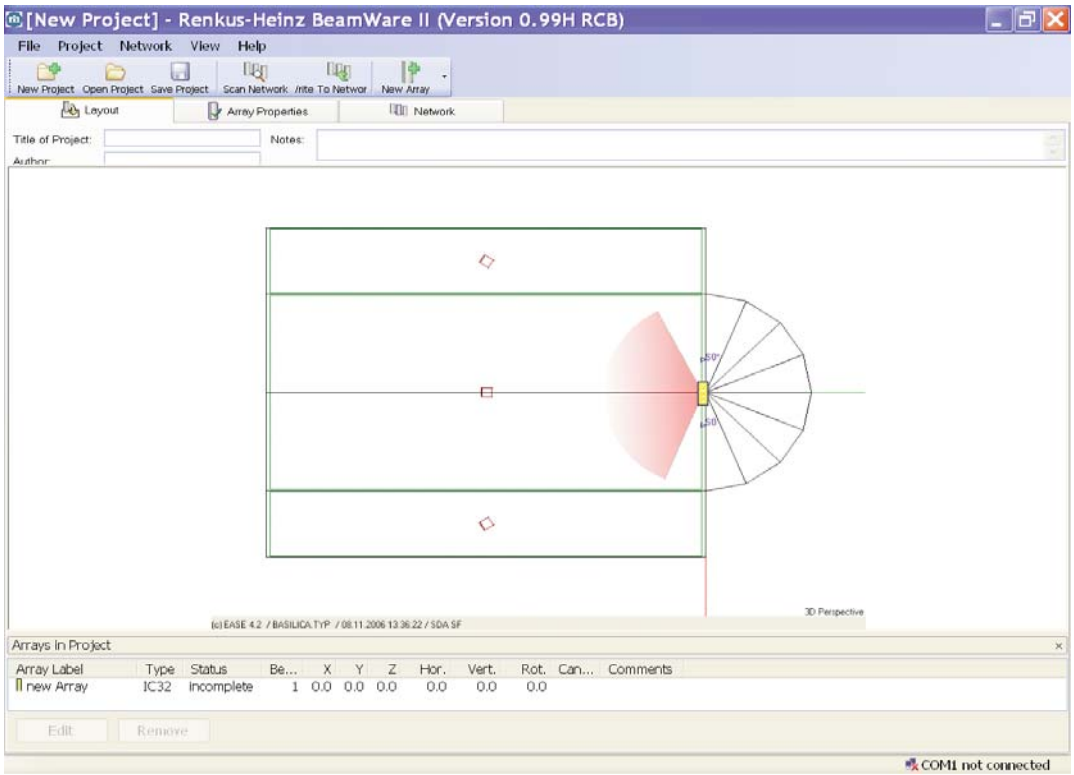
Add an array to your project and drag it from the list of arrays to place it on the layout bitmap.



The next step is to add an Iconyx array to the project and place it in the graphic. There are several ways to do this. You can go to the *Project* pull down menu, select *Add Array* and click on the array you want to add or you can go to the *New Array* icon in the Tool Bar section and then select the desired array.

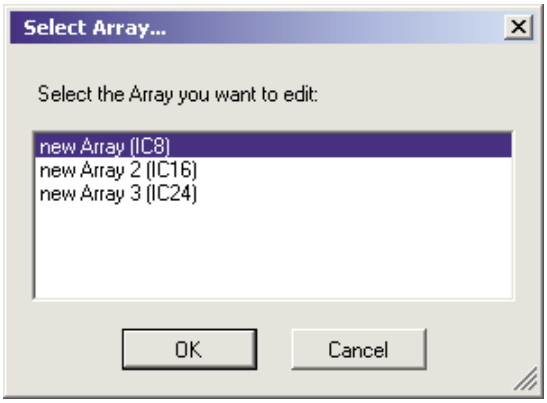
You can also right click on the floor plan graphic and then select *Add Array* from the pop up menu. Notice that when you use this method, the coverage graphic is automatically inserted into the floor plan graphic.

Selecting an array will add the selected array to the *Arrays in Project* listing at the bottom of the window. You can then grab it with your mouse cursor and place it and it's coverage display in the floor plan drawing. See below.

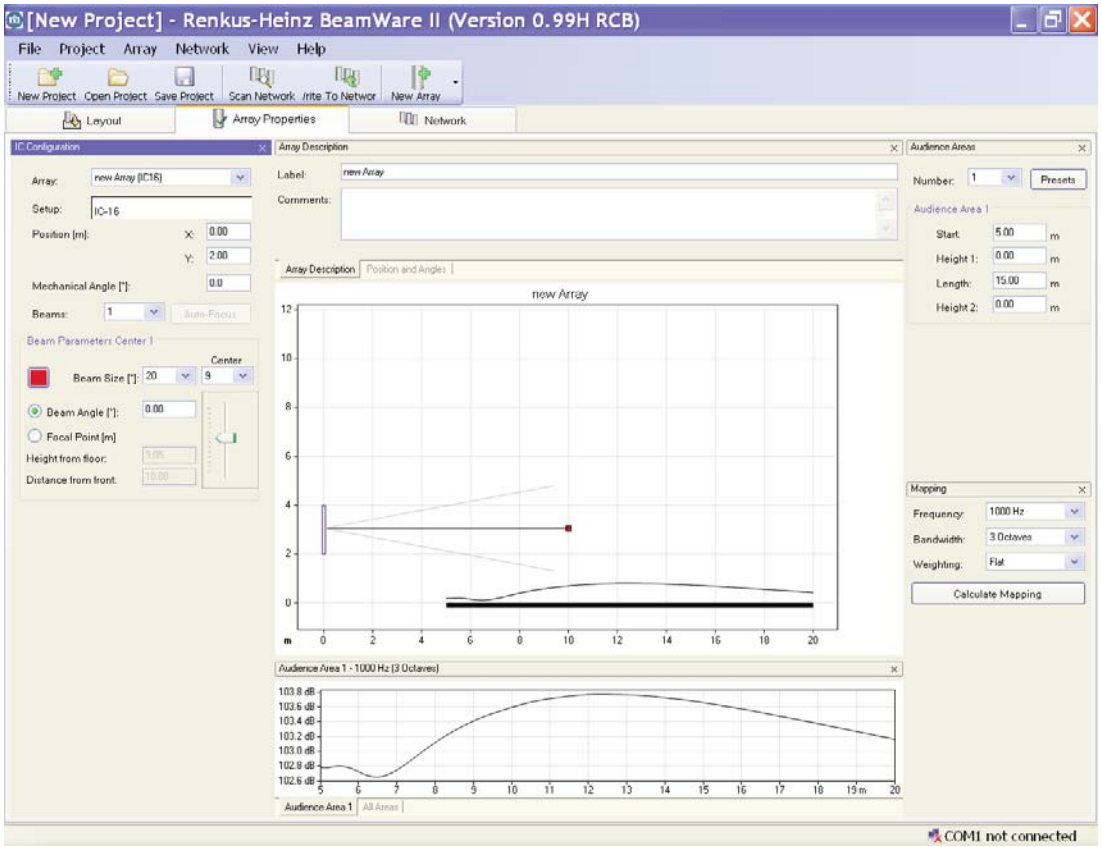

[New Project] - Renkus-Heinz BeamWare II (Version 0.99H RCB)
File Project Network View Help
New Project Open Project Save Project Scan Network Write To Networ New Array
Layout Array Properties Network
Title of Project:
Notes:
Author:
3D Perspective
Arrays in Project
Array Label Type Status Be... X Y Z Hor. Vert. Rot. Can... Comments
new Array IC32 Incomplete 1 0.0 0.0 0.0 0.0 0.0 0.0
Edit Remove
COM1 not connected

ARRAY PROPERTIES

1. To open the Array Properties section of Beamware 2, click on the *Array Properties* tab in the main Beamware 2 window. This will open a Select Array prompt listing the arrays you inserted into the project under *Layout* and asking you to select one of them (see below). Note that the program will not allow you to enter the Array Properties section until you have added an array to the project.

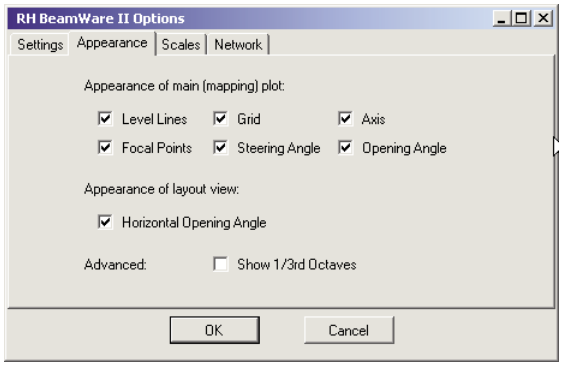


Select the array you want to work with and press *OK* to open the Array Properties window shown below.

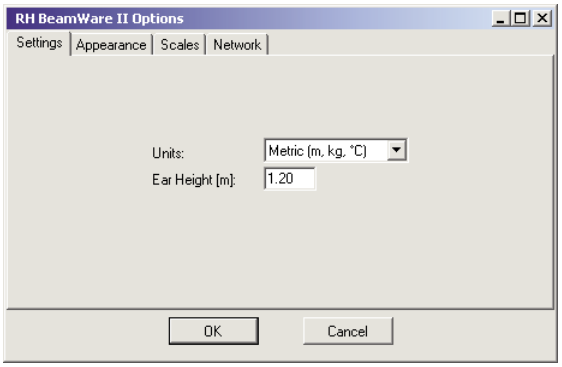

[New Project] - Renkus-Heinz BeamWare II (Version 0.99H RCB)
File Project Array Network View Help
New Project Open Project Save Project Scan Network Write To Networ New Array
Layout Array Properties Network
IC Configuration
Array Description
Audience Areas
Mapping
Calculate Mapping
COM1 not connected

Before you go any further, you should first verify that you are using the correct measurement system (feet or meters). The default measurement system is feet, so you may want to change to Metric (meters)

If you want to change it, go to the *File* pull down menu and click on *Options* or right click on the BeamWare Project window in the center of the screen. Either method will open the Options screen shown here.



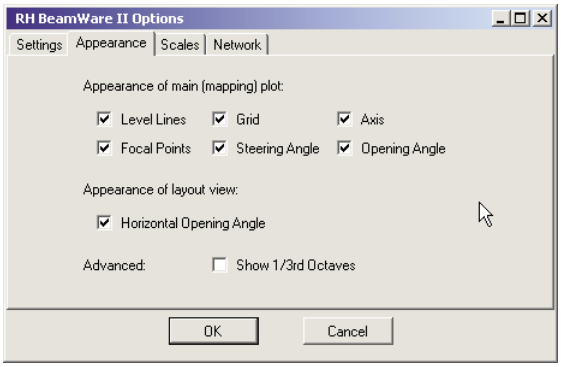
Click on the *Settings* tab to open the window shown below. Make the change and then click on *OK* to approve the change.

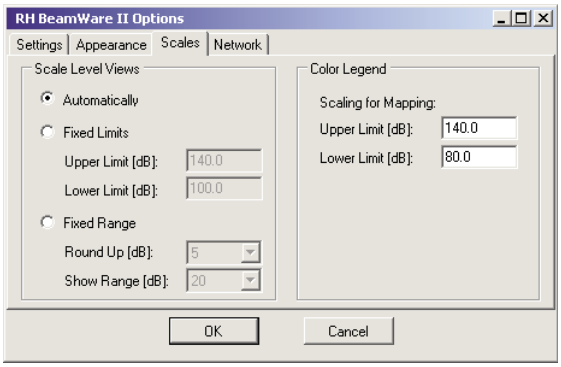


Notice that the Settings window also allows you to change the height of the measuring plane (the *Ear Height*). Until you are more familiar with the program we suggest you accept the default setting. There are times, however, when you will want to change the height of the measuring plane. It is set to 1.2 meters (3.94 feet) which is fine for a seated audience, but not for a standing audience.

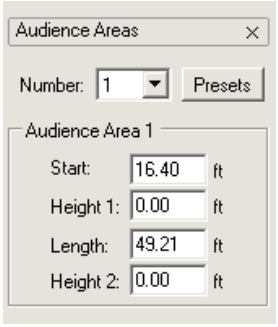
The Appearance tab allows you to control the appearance of the main Mapping plot. For now, accept the default settings. You can experiment with this later.

The Scales tab allows you to change the scales used in the main Mapping window. Many experienced users like to use the *Fixed Range* option under *Scale Level Views*; setting the *Round Up* to 5 and the *Show Range* to 5. You may want to experiment with this to see which setting you like best.



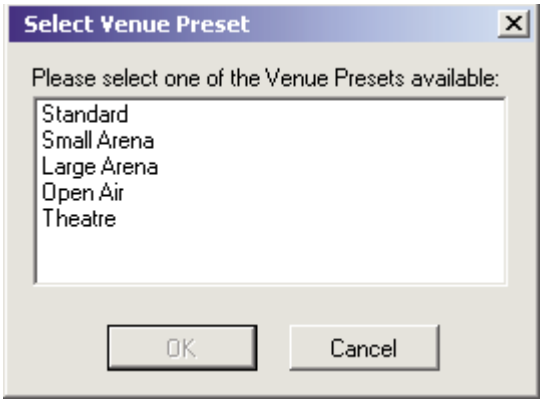


4. You should know the physical dimensions of the area(s) you want to cover, so the next logical step is to complete the *Audience Area* section on the right side of the screen.



To simplify this step, BeamWare provides five templates, the Standard one used as the default starting point and four others; Small Arena, Large Arena, Open Air and Theater. These templates are available by clicking on *Presets* button.

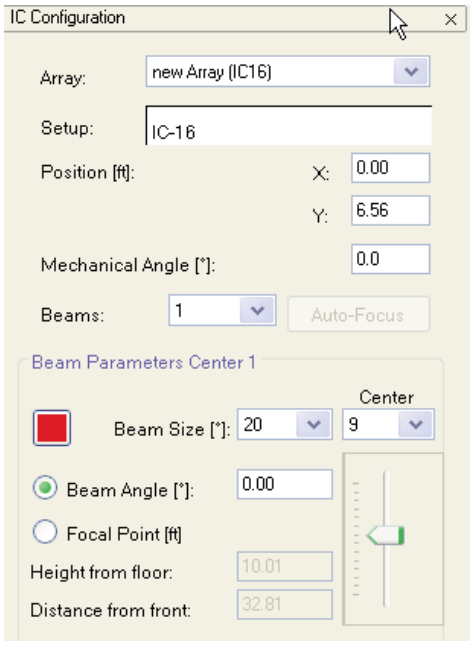
You should become familiar with these templates, so we suggest you try each one of them and then choose the one that comes closest to matching your project. Note how the number of areas and the size of the Audience Areas change.



Once you have selected the template, alter the Audience Area size(s) and location(s) to match your project's dimensions. Notice that you can also add or delete up to a maximum of 3 Audience Areas by using the *Number* field and associated drop down arrow. The *Start* field establishes the beginning point of the Audience Area relative to the "0" point of the graph. The Start point is usually the first row of seating. *Height 1* is the height of the front of the Audience Area. It usually is "0" for the front of the first floor area. *Length* is the physical length of the Audience Area from the front edge to the rear edge. *Height 2* is the elevation (height) of the rear of the Audience Area above the "0" plane.

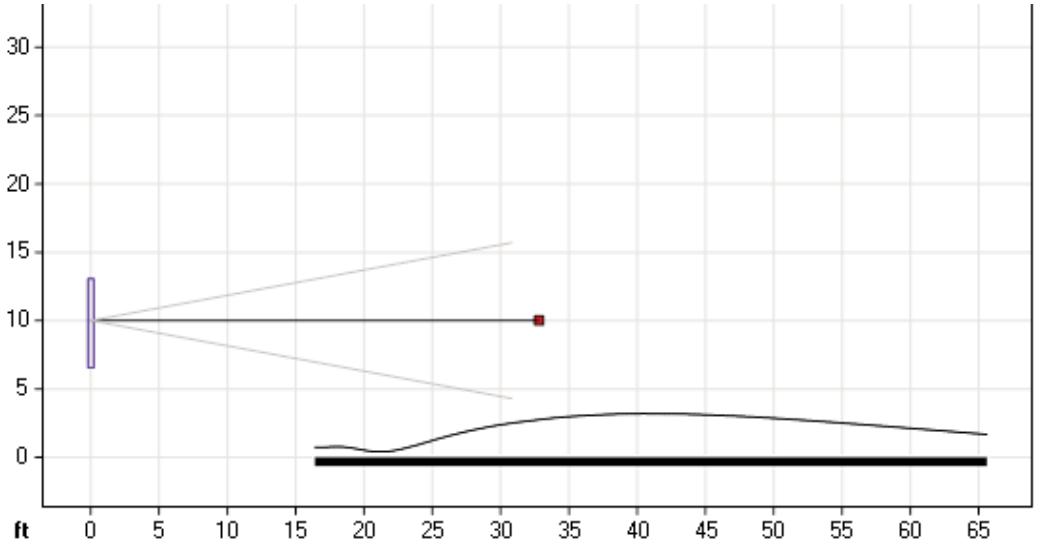
6. The next step is to configure the steerable column(s) you will be using in your project, i.e., position them, define the beam(s), etc. using the IC Configuration section on the left side of the window. See graphic on next page.

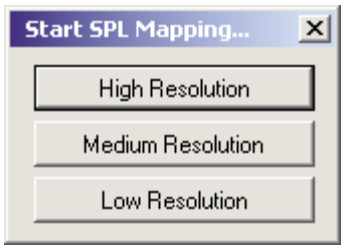
Now, it's time to locate (position) the steerable column. Usually it will be on the front wall (X = 0.00) on the New RH BeamWare Project display. If it will be placed at the front of the stage away from the wall, for example, move it forward by inserting its correct location. Note that after you insert a figure in the field, you need to press *Enter* on your keyboard to OK the change in location. The down arrow associated with the Array field allosw you to select between arrays in multiple array systems.



The *Y* field controls the height of the column array by positioning the bottom of the column above the Floor level (the "0" level) The default position is 6.56 feet (2 meters). The *Mechanical Angle* field tilts the column forward or backward (minus [-] numbers tip it back and plus [+] numbers tilt it forward).

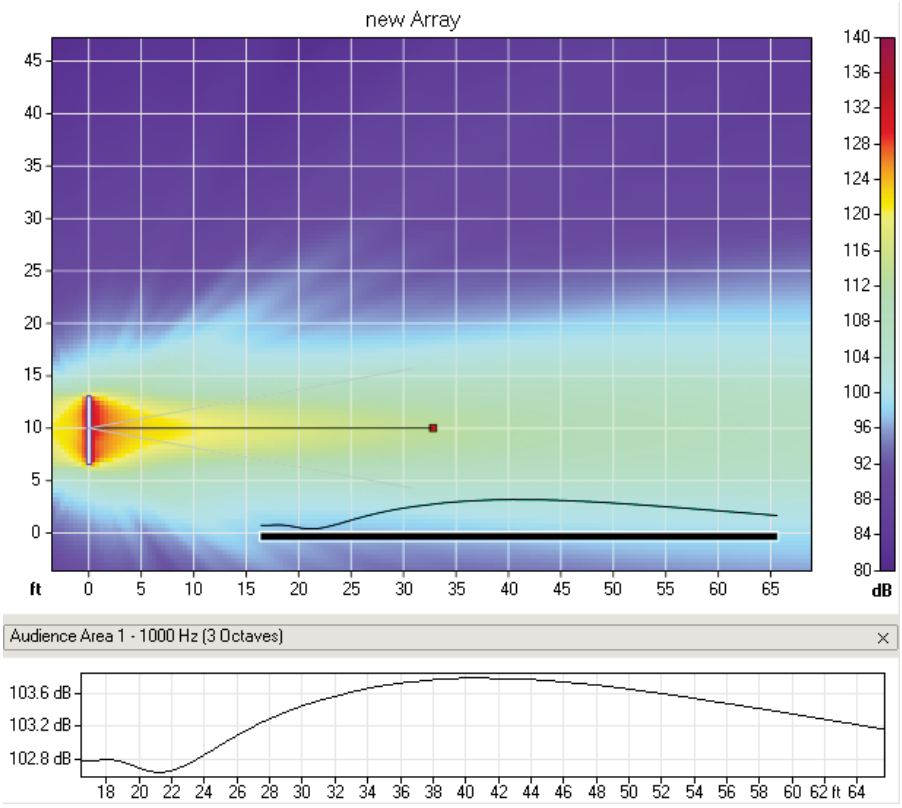
The next step is to choose the number of Beams using the *Beams* field and its associated drop down menu. One of the unique features of Iconyx steerable arrays is the ability to generate either single or multiple lobes. We'll be discussing multiple lobes later in this tutorial, so for now accept the default 1 beam configuration. *Beam Size* lets you choose the Array's opening angle which controls the sharpness of the vertical lobe (beam). Try it out using the drop down arrow. Notice how the opening angle of the array in the graphic varies as you choose different opening angles.





Note that at any point you can click on the *Calculate Mapping [F5]* bar to tell the program to map the array's performance. Initially, a pop up screen will ask you to choose the resolution of the simulation. Low Resolution simulations are much faster to run than High Resolution ones. All you need to do to start the simulation is to make your resolution choice by pressing one of the bars.

The simulation shown below was made using Medium Resolution.



Beam Angle aims the vertical beam up or down. Try it out by selecting *Beam Angle [*]*, changing the number and observing its effect. Note that after entering a new number you will need to press *Enter* to initiate the change. You will also need to do a new *Calculate Mapping* to view the change. The old map will have been wiped out by the program as you made the change.

Note that you can also check *Focal Point [ft]* and then enter the exact location of the beam's focal point in *Height from Floor* and *Distance from Front*. Another way to position the beam's focal point is to use the mouse cursor to grab the end point of the aiming axis and move it to the desired location. Try it out. It's easy to do.

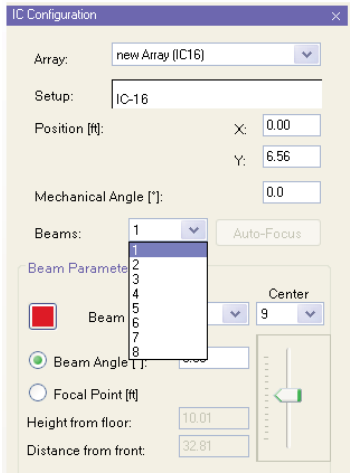
The *Center* field section allows you to move the location of the column's acoustical center up or down using either the drop down arrow or the associated slider control. Notice that the acoustical center can be moved at will, but cannot be placed on either the very top or bottom transducer. The SPL levels in the graphs will change as the setup parameters change.

7. Another setup parameter that needs to be verified is the frequency and the bandwidth of the simulation signal. These are selected with the *Frequency* and *Bandwidth* drop down arrows and there associated fields. The *Frequency* section lets you select frequencies from 100 to 10,000 Hz while the *Bandwidt*h section allows you to run the simulation over 1/3 octave, 1 octave or 3 octaves bands, or to specify the frequency range of the simulation. To set up a specific frequency range use the *Frequency* field to establish the lower frequency limit and the *Bandwidth* field to set the upper limit.

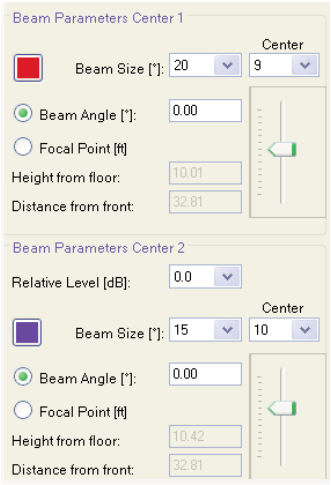
Now, let's investigate the multiple beam capabilities of Iconyx. In many installations, a single beam is the ideal solution for the room's acoustical challenges and the beam's movable acoustic center provides all the mounting location flexibility needed.

In some cases, however, multiple beams are needed to provide the desired coverage. Rooms with a balcony are a good example; in most cases a single beam can't cover both the main floor and the balcony. One solution is two line arrays, one for the floor and the other for the balcony, but this is expensive. In other cases, architectural considerations or microphone placement dictate that the column be mounted higher than is ideal and it's impossible to cover the audience area with a single beam.

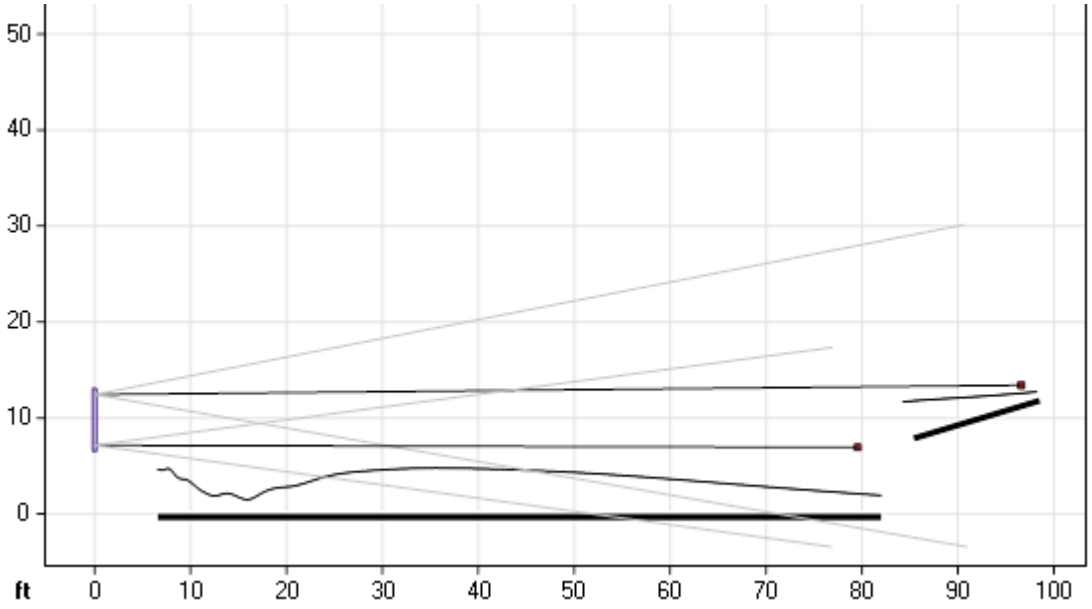
Iconyx solves these problems by offering multiple beams, each having its own acoustical center. To explore this unique Iconyx feature, click on the drop down arrow associated with *Beams.* This will produce the following screen.



Notice that on the IC16 you can select up to a maximum of 8 lobes. It's up to four on the IC8, 12 on the IC24 and 16 on the IC32. For now, select 2 to add a second beam to the graphic.

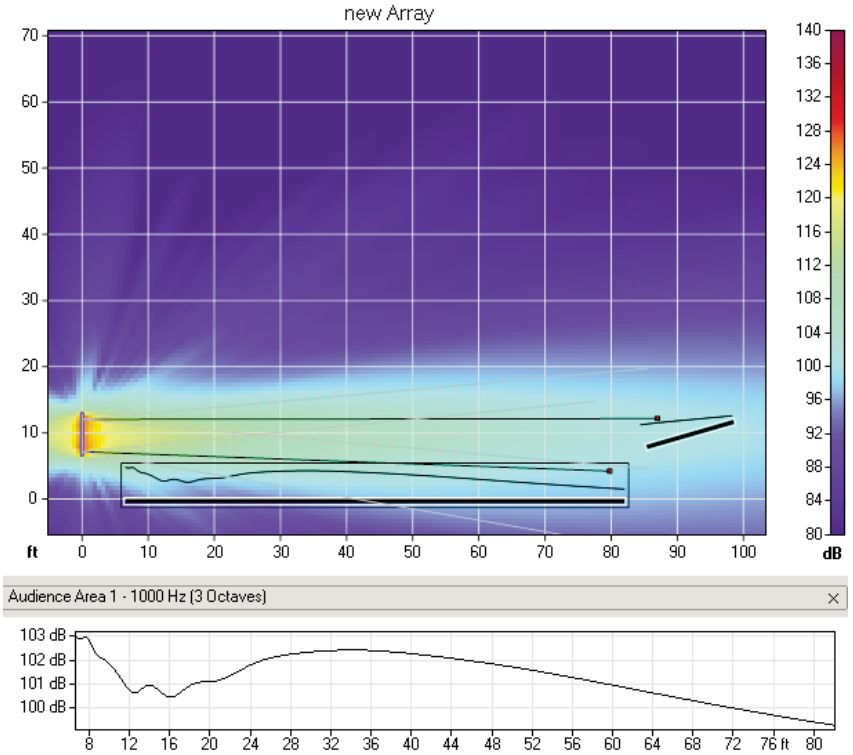


Change the acoustical center for both beams, placing the acoustical center for one beam at the top of the array and the other one at the bottom.

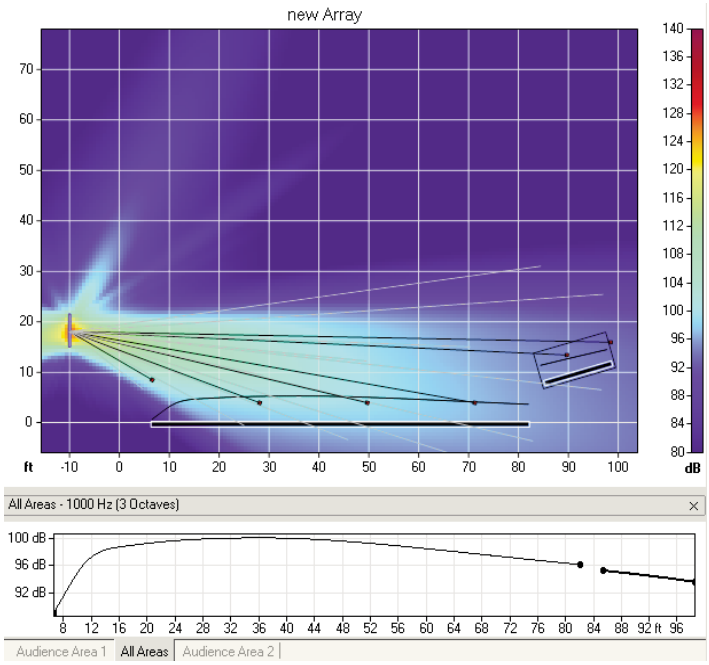


Note that you can place the acoustical center of either Beam 1 or of Beam 2 at the top of the array. In other words, either beam can be above or below the other one. In fact, both beams could have their acoustical center at the same location.

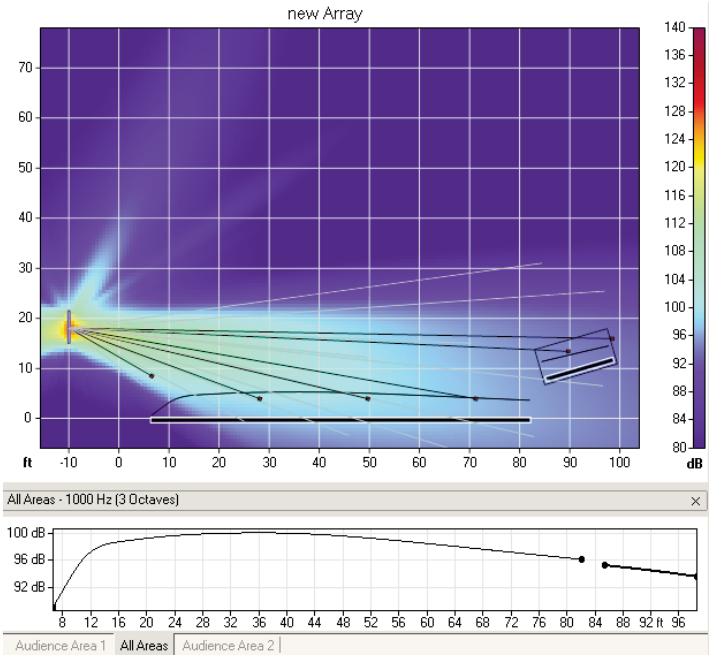
The only difference is that the level of Beam 2 can be reduced by inserting a negative value in the *Relative Level [dB]* field, while the level of Beam 1 can not be changed. This ability to reduce the level of Beam 2 allows you to balance the SPL levels when the beams are covering different audience areas.



As the next step in this exercise, let's assume you have to move the IC16 10 feet further away from the audience area and up 20 feet in height. Change the Position [ft] parameters to read X = -10 and Y = 26.46 and reaim the two lobes. Press *Enter* to initiate the change.



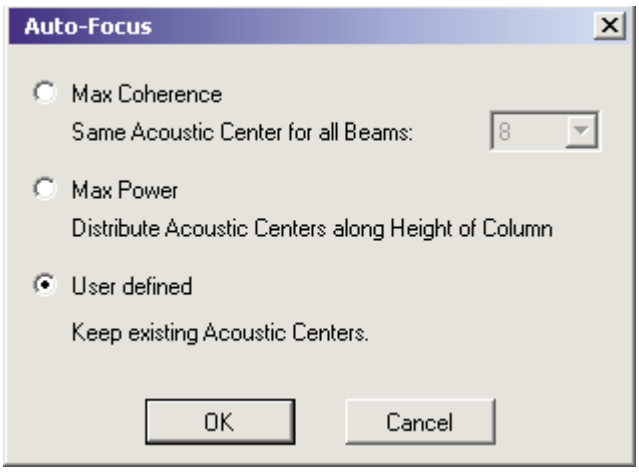
As you can see, there is no way to get smooth coverage from this mounting location with just two beams. Switch to 6 lobes and try again. Notice how the coverage is much smoother. You probably also noticed that with the array placed at this height, you cannot get good coverage on the front of the audience area. You will either need to add front fill loudspeakers or lower the column. The following screen shows what can be accomplished with the column lowered to 15 feet and the beam aiming and levels adjusted.



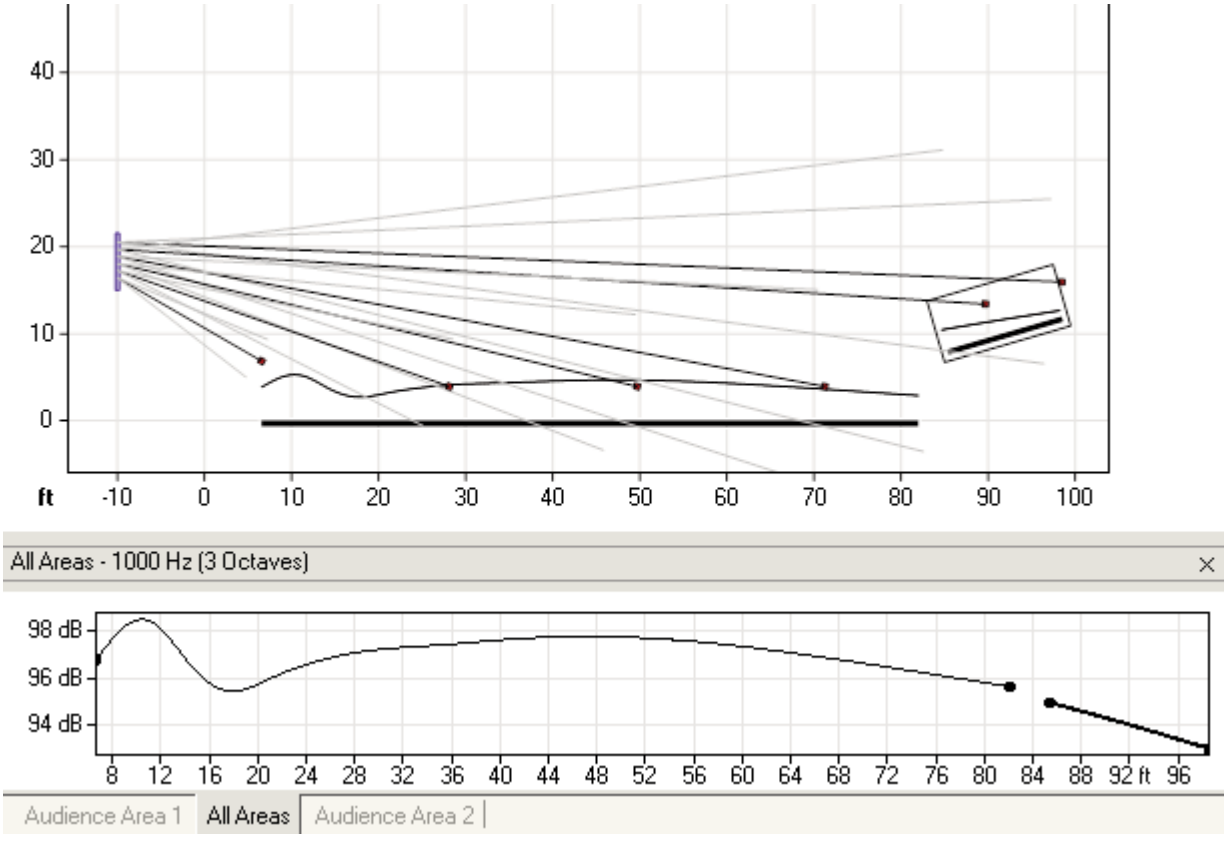
Notice that the SPL levels dropped significantly. The more lobes you use the lower the level of each lobe. Spacing the beam's acoustical centers further apart will produce higher overall SPL levels than placing all the acoustical centers at the same spot. Be aware that moving the acoustical centers of the multiple lobes apart affects the signals coherency and degrades the sound. It's best to keep them close together in systems like this.

Now that we understand the basics of using Beamware 2, it's time to investigate one of the unique tools Beamware 2 includes to even further speed the design process. It's called *Auto-Focus* and it is available as a design aid whenever you choose to use 2 or more beams. You'll find it in the *IC Configuration* section- next to *Beams*.

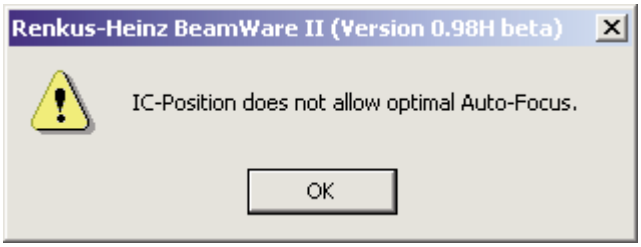
Clicking on *Auto-Focus* will open the setup window shown below.



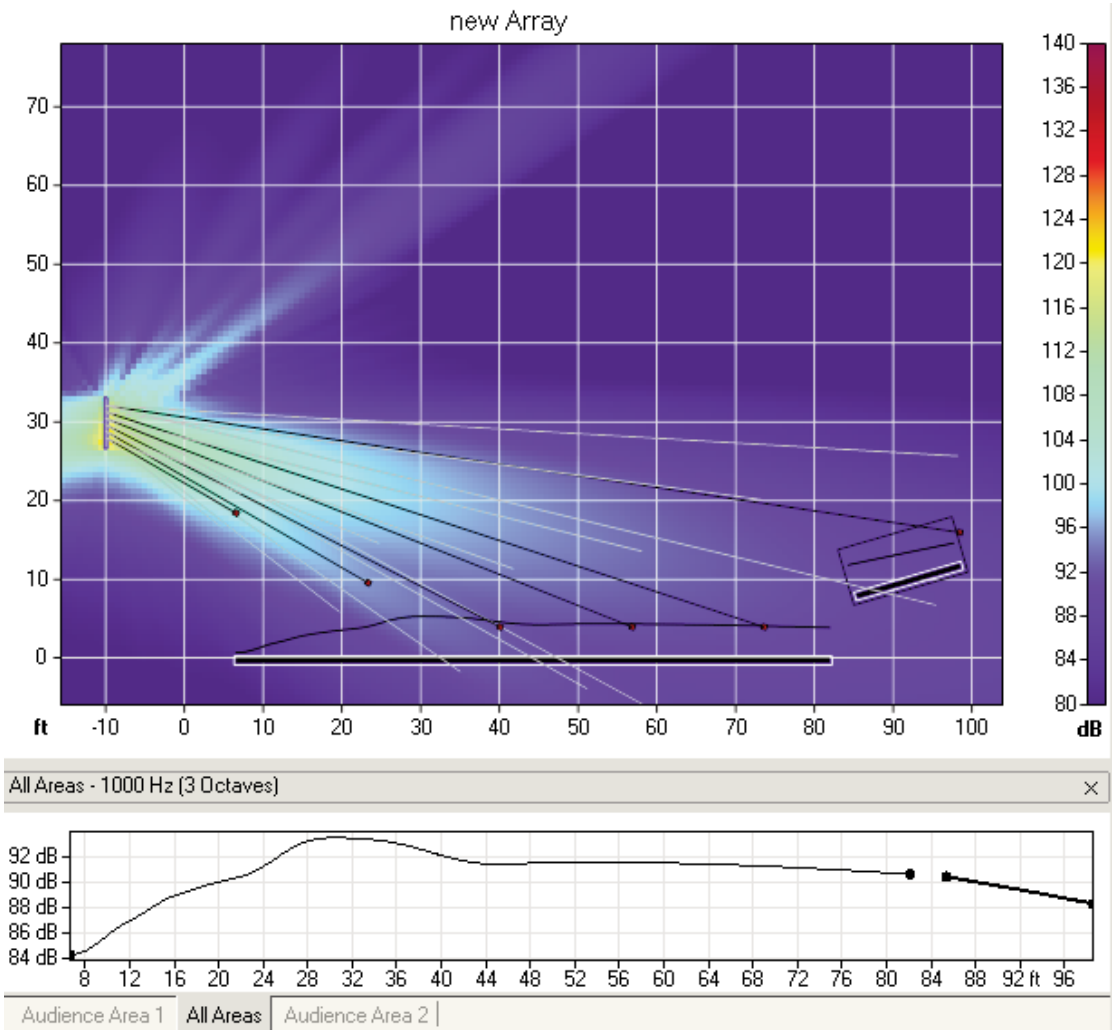
Notice that it gives you the option of dictating the location of the acoustic centers or of allowing the program to select them on the basis of *Max Power* or *Max Coherence*. Approve the location method by clicking on *OK* and the program will automatically determine for you the best focus point for each of the beams.



Auto-Focus will also warn you if the location you have chosen for the steerable array isn't ideal; see below.



You can override this warning if you want and the program will still attempt to properly focus all the beams. You may, however, want to try moving the array up or down to see if you can find a better location for the Iconyx array or use more or fewer beams to see it you can eliminate this warning prompt.

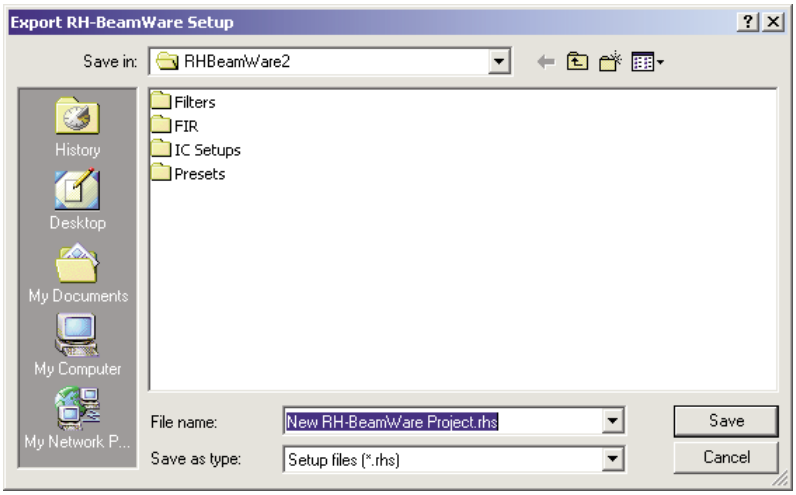


At this point you may want to save your work. The next step is Network Configuration and you have gone as far as you can in Beamware 2 unless and until you have an actual network of column loudspeakers connected to you PC.

Beamware 2 offers you a variety of methods to save your design. Using *Ctrl+S* will save your work as a project file that can be opened again at a later date and *Ctrl+A* allows you to save it under another name.

Selecting *Create Print Version* under the *File* pull down menu will create a .rtf file that can easily stored for future reference or printed.

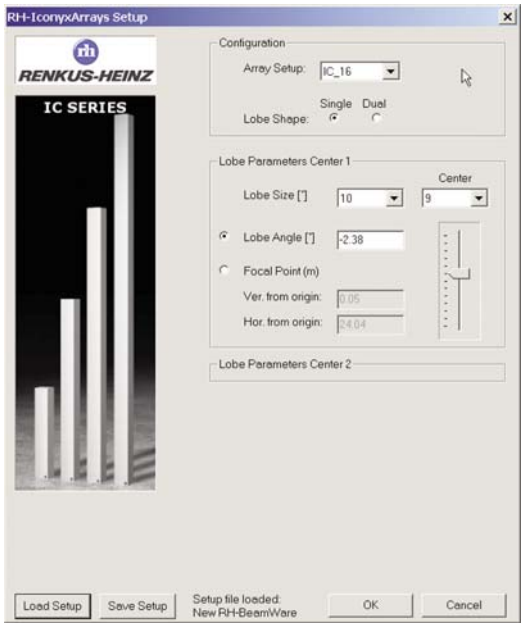
Selecting *Export* Setup under the *File* pull down menu opens a setup screen that allows you to Export (save) the Beamware 2 Setup as a .rhs setup file that can easily be imported into EASE and EASE JR. It's a simple thing to do; just open the EASE Iconyx DLL file into your EASE project in the normal fashion



and then click on *Load Setup* to import all the Beamware settings into EASE.

If you have EASE or EASE JR, we strongly encourage you to take the time to model the project in EASE and evaluate the system's overall performance. Beamware 2 only shows you the arrays vertical and horizontal coverage and does not show the effect of reflections on intelligibility or clarity. EASE and EASE JR also allow you to analyse the effects of interference in designs having more than a single column array.

If you do not have EASE or EASE JR, we urge you to consider purchasing at least EASE JR to assist you in your design efforts.



NETWORK SETUP

After you are happy with the design the next step is to transfer the setup information from the software domain in which it was created into a network configuration; i.e., to move the setup information from your computer to the Iconyx arrays it will be controlling.

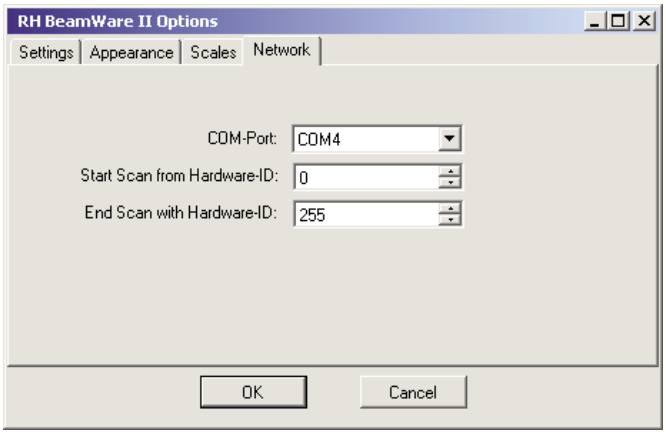
To elaborate; in Beamware 2 we distinguish between two essential control levels; software projects and network configurations. Software projects are purely abstract entities. They are based on the idea of having a set of arrays (like IC16's or IC32's) with established parameters (opening angle, focal point, acoustic center location(s), physical location, etc.). In contrast, a network configuration is a set of IC8 or IC16/8 columns connected to a COM port on your computer.

A software project gains practical relevance only by assigning Columns (hardware domain) to Arrays (software domain). A Network configuration can only be manipulated with respect to the DSP settings, etc. by creating Arrays from the existing Columns. Note the distinction between Columns and Arrays. A Column is an IC8 module or an IC16/8 which has one IC8 module. Arrays are made from these Columns (modules).

In Beamware 2 these relationships are stored in the following manner; every Column has a unique ID (ICID) number and every Array has a unique ID (Array ID) number. When a column is assigned to an array, its group is set to the corresponding Array ID. Both ID's are then stored in every column when it is loaded (written to) and saved with every project.

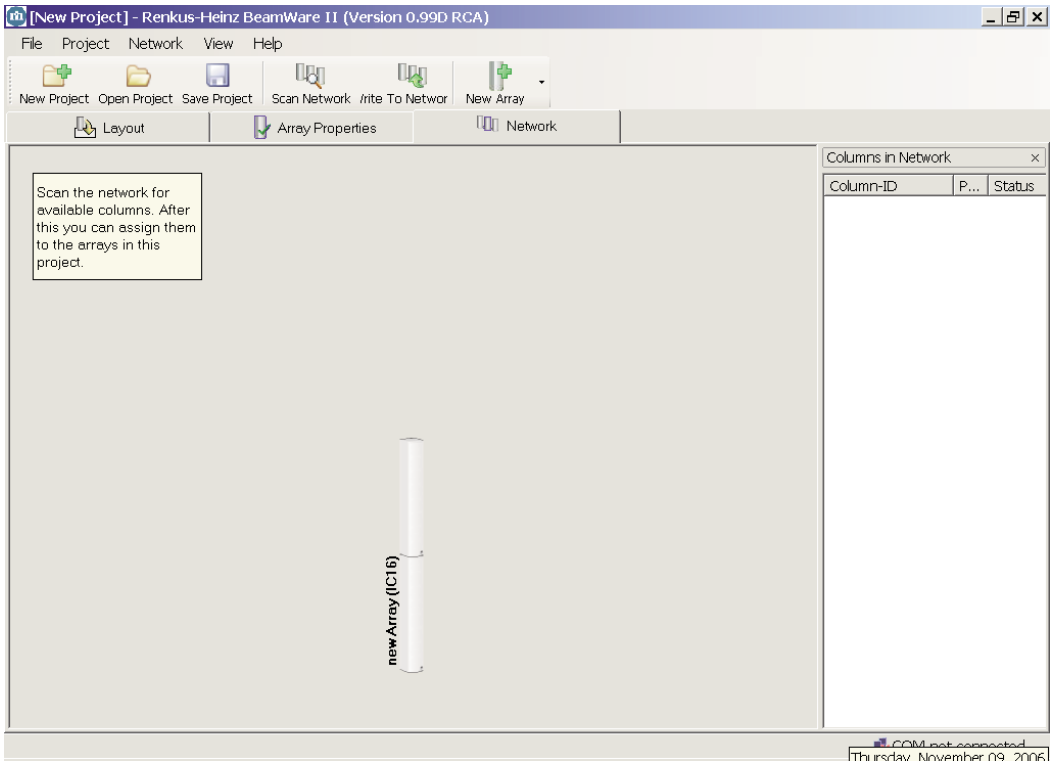
1. The first step in configurating the Network is to select the COM Port being used by the USB to RS422 adapter. **You can not configure the network until the adapter is installed and connected to the columns and the power to the system is turned On.**

Open the Options folder by selecting it from the *File* pull down menu or by using the F9 shortcut key and select the *Network* tab. Use the *COM-Port* drop down arrow to select the COM Port being used by the USB to RS422 adapter. If you aren't sure which COM Port is being used by the USB to RS422 adapter, you can find out by going to the *Device Manager/Ports (Com & LPT)* in your computers *System Folder*.



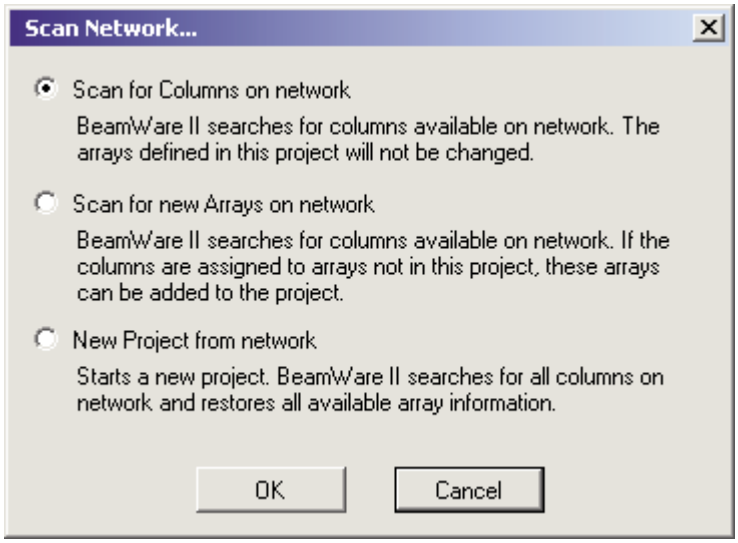
Before moving on you may want to adjust the Scan Range. Beamware 2 is capable of managing a maximum of 256 Columns and with the default 0 to 255 setting will scan all 256 locations. Changing it to 0 to 25 will speed up the scan by a factor of 10.

Now open the *Network* tab.


[New Project] - Renkus-Heinz BeamWare II (Version 0.99D RCA)
File Project Network View Help
New Project Open Project Save Project Scan Network rite To Networ New Array
Layout Array Properties Network
Scan the network for available columns. After this you can assign them to the arrays in this project.
new Array (IC16)
Columns in Network
Column-ID P... Status

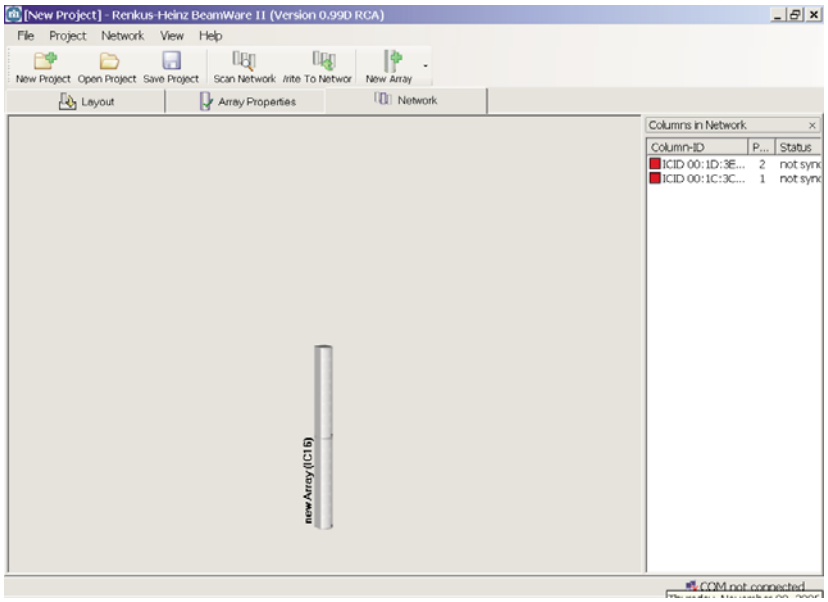
Notice that Beamware 2 has placed an IC16 Array into the configuration window. At this point still are in the software project domain. The Columns in Network section of the window is blank because we haven't yet scanned the Network to determine what Columns are available. Note that you may have to adjust the Columns in Network section of the window to see the entire listing.

The next step is to scan the network for Columns/Arrays (Hardware) that can be linked to the Arrays. Press the *Scan Network* button. This will open the screen shown below.


Scan Network...
Scan for Columns on network
BeamWare II searches for columns available on network. The arrays defined in this project will not be changed.
Scan for new Arrays on network
BeamWare II searches for columns available on network. If the columns are assigned to arrays not in this project, these arrays can be added to the project.
New Project from network
Starts a new project. BeamWare II searches for all columns on network and restores all available array information.
OK
Cancel

It presents us with three scan options. We'll choose the first option and discuss the other two options later.

Press *OK*

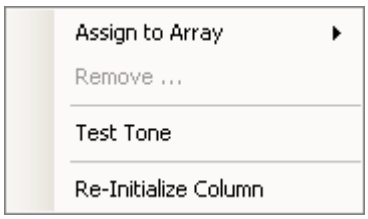

[New Project] - Renkus-Heinz BeamWare II (Version 0.99D RCA)
File Project Network View Help
New Project Open Project Save Project Scan Network Write To Networ New Array
Layout Array Properties Network
Columns in Network
Column-ID P... Status
ICID 00:1D:3E... 2 not sync
ICID 00:1C:3C... 1 not sync
new Array(1C16)
COM not connected

As you can see, Beamware 2 has found 2 Columns on the Network. The red box indicates they have not yet been assigned to an Array. The box will change to green after the Columns are assigned to an Array and the configuration files have been loaded into the Array. The “not synchronized” listing means they are lacking the configuration files.

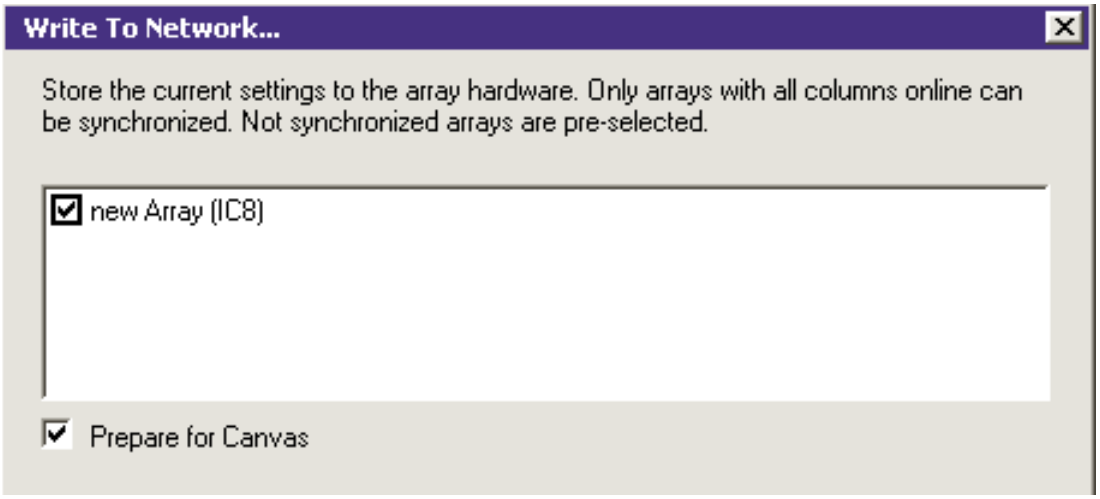
If you were to check the Layout window now, you would find that the original yellow array outline has changed to red. The 3 major sections of Beamware 2 are linked together.

The easiest way to assign one of the Columns to an Array is to grab it using the cursor and left mouse button and drag it to one of the Column icons. Notice that the color of the Column icon changes when aColumn is assigned to it.

One issue that may arise, especially in large projects where many Columns/Arrays are involved is which Column is represented by which icon. To make sure this won’t be a problem, Beamware provides a means of sending a tone signal through each individual column. Selecting a Column and right clicking will open the pop up menu shown below. Clicking on *Test Tone* will send a signal through the selected Column.

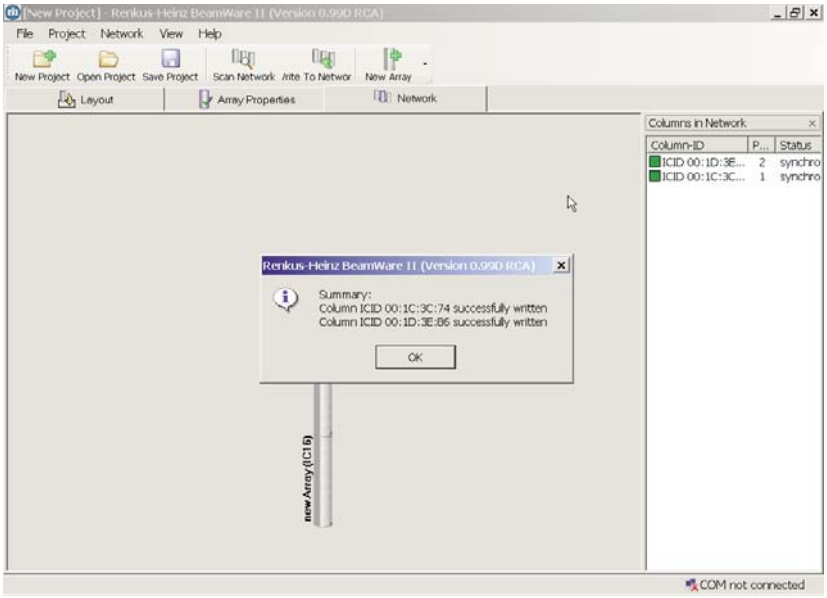


The final step is to load the configuration (setup) files into the Arrays. Press *Write to Network* button in the Tool Bar will open the screen shown below


Write To Network...
Store the current settings to the array hardware. Only arrays with all columns online can be synchronized. Not synchronized arrays are pre-selected.
new Array (IC8)
Prepare for Canvas

The array listing and associated check boxes allow you to choose the arrays that will be configurated. During the process, the program will assign numbers (1 to 8) to the arrays for use by Canvas.

OK the prompt. When the files are successfully loaded a Prompt will appear (see below) informing you the data has been successfully loaded. The red boxes in the Column listing will also turn green as a visual indication of their status.



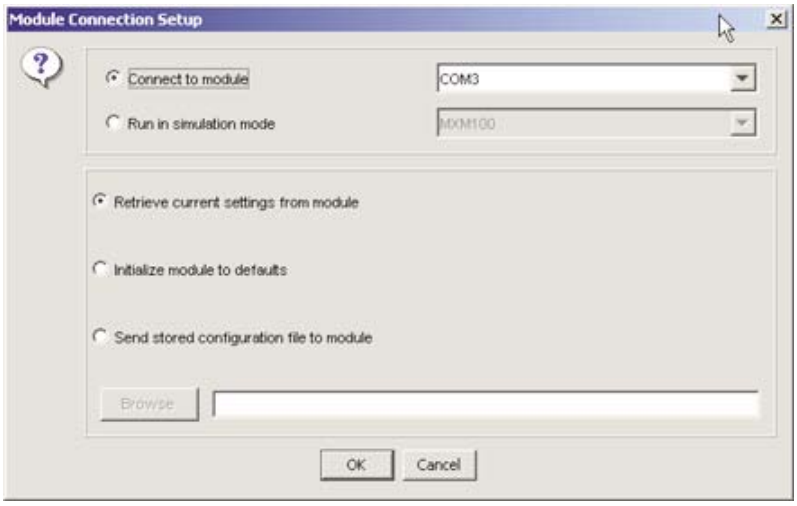
The Arrays are now configured and ready to use.

Now, to return to the Scan Network setup window and explore the two setup options we ignored earlier (see page 35). The *Scan for new Arrays* on network option is similiar to the *Scan for Columns on network* option except that it also identifies previously established Arrays. In most cases, you will find that this is the case as the Array(s) were created and loaded with default setup parameters during final inspection at Renkus-Heinz. The default setup information is not uploaded to the Beamware project.

The third option, *New Project from network*, is used mainly to connect to an existing Iconx installation. It searches the hardware network and sets up a new project in Beamware 2 with all the proper settings. It sets up a new project in Beamware 2 and uploads the setup information from the Arrays to the software. Remember, when Beamware 2 is used all the settings are stored in each array.

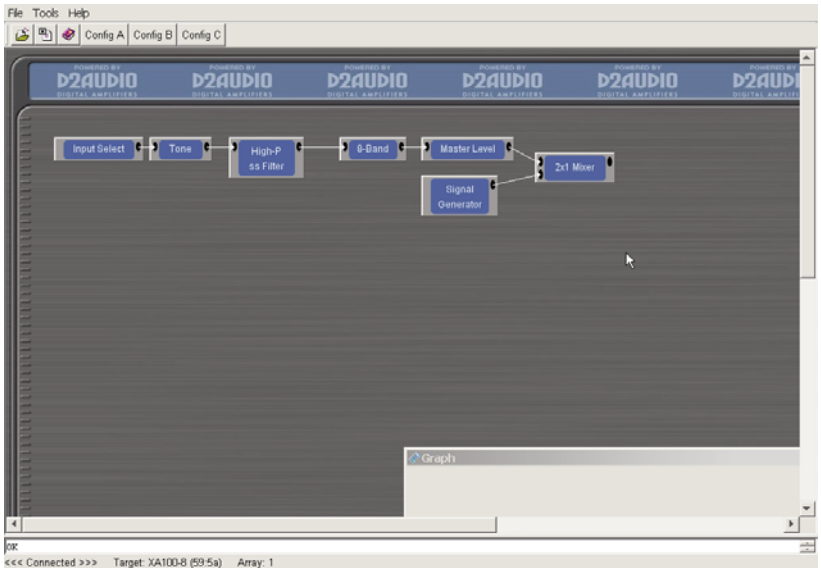
USING CANVAS

1. To open the Canvas program, click on the Canvas Icon the installer program placed on your desktop. The screen shown below will open.



Notice that you have several options; one is to select the column array you want to control through use of the drop down arrow. You also have a choice of initializing the column array to the default setting or of retrieving the column array's previous settings. We recommend that you use "Retrieve current settings from module" since several of the parameters were preset by us before shipment.

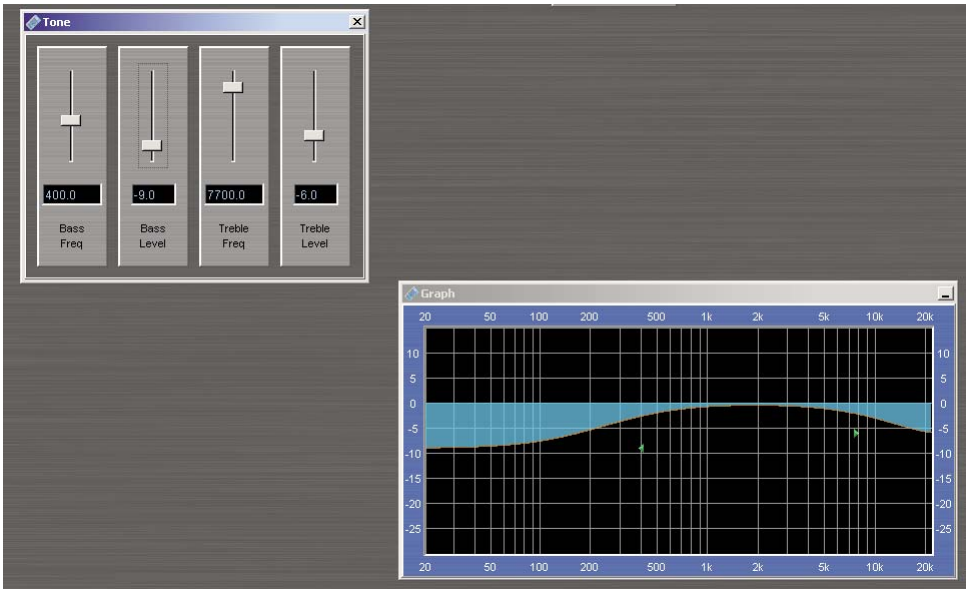
Clicking on *OK* opens the following window.



Notice the blank window in the lower right corner of the screen. You may have to use the scroll bars to view it in its entirety.

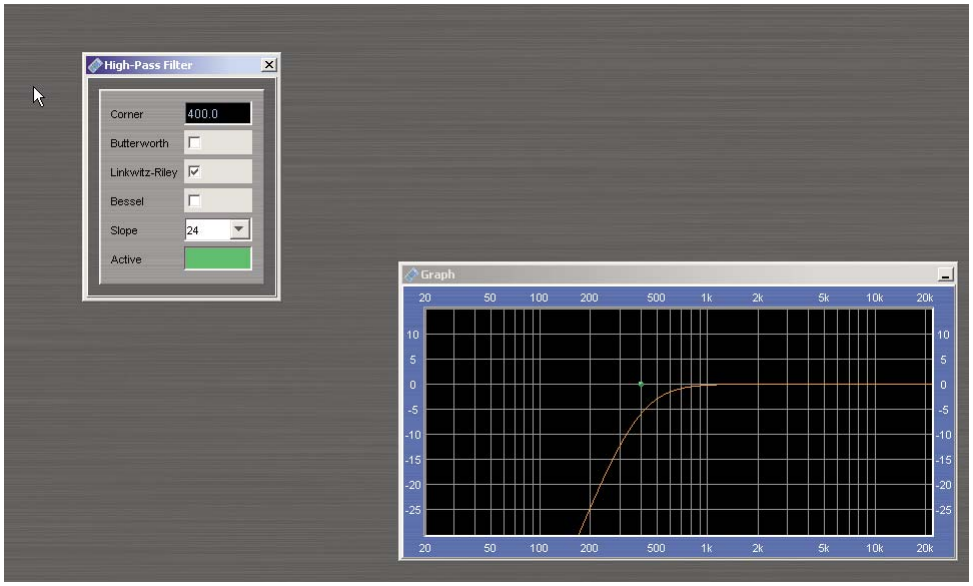
As you can see from the flow chart, Canvas places control of the column array's frequency response and level at your fingertips.

Clicking on the *Tone* button opens the tone control screen shown below.

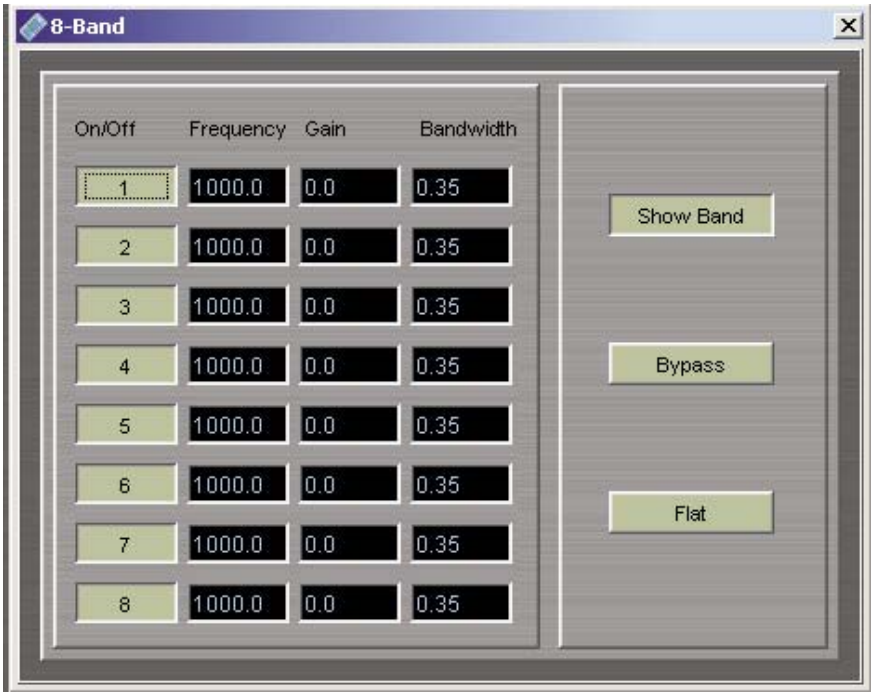


It gives you total control of both the low and high frequency response.

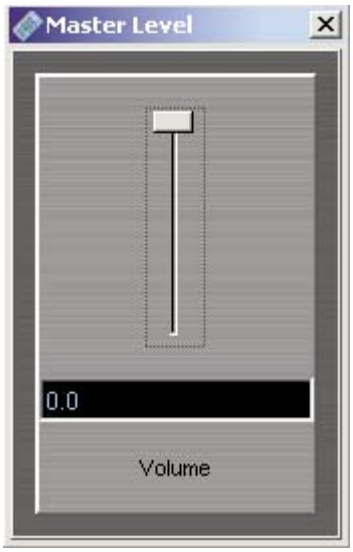
The *High Pass Filter* button inserts a high pass filter into the signal chain and allow you to dial in any low frequency roll off you desire. It was preset to 100 Hz with a 24 dB per octave slope. Please don't attempt to set it to a lower frequency as this could lead to transducer failures. If you need more lows in the system, add a subwoofer. Increasing the frequency is fine since this provides greater protection for the transducers.



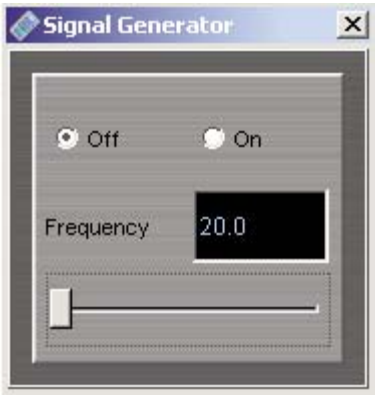
The 8-Band button provides access to an 8-band parametric EQ allowing you to adjust the response to compensate for any room acoustic pecularities.



The Master Level button allows you to control the output level of the column array.



A tone signal generator is also included in the program. Pressing the *Signal Generator* button will bring up the following screen which allows you to choose the signal's frequency and distribute the signal to the column array.



Please note that any changes are not saved in the column array's memory until you have activated the *"Save settings to EEPROM"* function under the *Tools* pull down menu. Otherwise the settings will be lost as soon as the power is turned off.

INSTALLATION

PRE INSTALL TEST

It's always a good idea to test the column array as a complete unit before it is installed to make sure all the connections were properly made and all the transducers are working. If there is a problem, its a lot easier to find and correct before the unit is physically installed.

Use one of the 3-pin connectors supplied with the assemby to connect audio to the loudspeaker and the power cord to connect the power. You do not need the digital control cable to conduct a simple audio test.

Notice that these connections can be made inside any one of the access chambers. This Iconyx feature gives you a choice of where the audio, power and digital control connections are made. You can, for example, bring the power into the bottom module and the audio and digital control lines into the top module.

CABLING REQUIRED

POWER

Your Iconyx column was supplied with a 6-foot AC Power cord with IEC connectors.

Note that the column(s) do not include a power on/off switch and you will have to make sure an external power on/off switch is provided. Each module, however, does include a self-restoring circuit breaker as protection against damage in the event of an internal failure.

Power requirements for Iconyx columns are listed below.

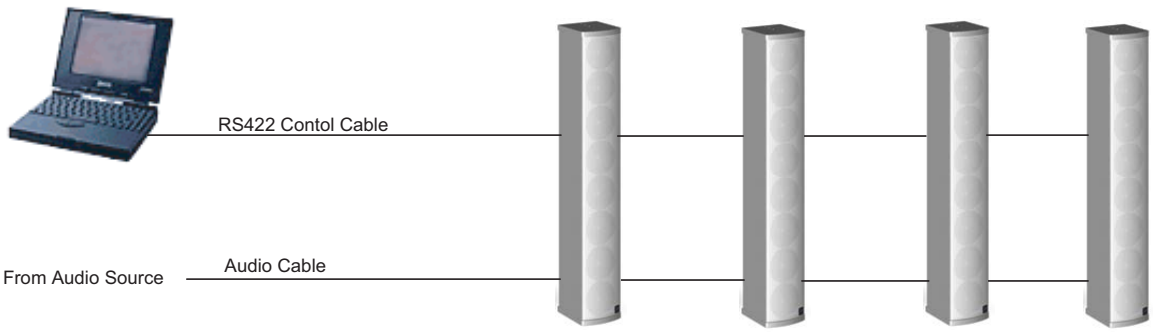
IC8 and IC16-8:	Universal 100/240 VAC, 50/60 Hz; 120 Watts
IC16 and IC32-16:	Universal 100/240 VAC, 50/60 Hz; 240 Watts
IC24:	Universal 100/240 VAC, 50/60 Hz; 360 Watts
IC32:	Universal 100/240 VAC, 50/60 Hz; 480 Watts

WARNING:

1. The AC mains must be connected to a mains socket outlet with a protective earthing connection.
2. To remove power from the Iconyx column, disconnect the AC power cord.
3. If the knockout on the rear cover is used during installation, a means of preventing damage to the AC power cord must be provided.

AUDIO & DIGITAL CONTROL LINES

A block diagram of a simple four column system follows. Note that the RS422 digital control cable and the audio signal cable loop from column to column.



Each access port includes input connectors and looping ouput connectors for the audio and RS422 digital control lines. See below.

The audio cable is a conventional twisted pair shielded cable; 24 gauge or larger recommended. The audio connectors are 3-pin Phoenix connectors. The audio amplifier has a high (10 K Ohm) input impedance to allow bridging a number of amplifiers across the line and requires a 1 volt audio signal to drive the amplifier to full output.

The digital control cable requires a minimum of 5 conductors; a twisted pair for Transmit, a twisted pair for Receive and a ground line. Common practice is to use 3 twisted pair; 26 Gauge or larger.

The input connector for the digital control line is a standard 9-pin DB-9 connector while the looping output line is a 7-pin Phoenix connector.

The wiring of the 7-pin Phoenix connector and the DB-9 connector is shown below.

7-pin Phoenix	DB-9 Connector
Pin 1 = RX - (Receive)	Pin 1 = RX - (Receive)
Pin 2 = TX + (Transmit)	Pin 2 = TX + (Transmit)
Pin 3 = TX - (Transmit)	Pin 3 = TX - (Transmit)
Pin 4 = Ground	Pin 4 = Not Used
Pin 5 = Not Used	Pin 5 = Ground
Pin 6 = Not Used	Pin 6 = Not Used
Pin 7 = RX + (Receive)	Pin 7 = Not Used
	Pin 8 + Not Used
	Pin 9 = RX + (Receive)

FAULT RELAY WIRING

A Fault Relay is an optional Iconyx feature . The Fault Relay when installed provides an indication (a dry signal contact) of a failure or malfunction in any one or all of its associated D2 amplifier's eight DSP/amplifier channels. The dry contact provides a means of triggering an associated remotely located fault alarm panel (not provided by Renus-Heinz).

The Fault Relay contacts are rated for an operating voltage of a maximum of 28V DC or AC at a maximum current of 1 amp. This is considered to be a "dry contact". The contact is completely isolated from circuit or chassis ground. Under no circumstances is the contact to be used for 120V AC line operation, any voltage higher than 28V AC or DC or any application connected either to the hot or neutral side of the AC line.

Connections to the Fault Relay are made using the 2-pin Orange Phoenix connector designated R-Control. A separate Fault Relay is needed for each 8-channel DSP controlled digital amplifier; an IC24, for example, would have 3 Fault relays.

To prevent contact wear, it is suggested that the input of the circuit used with the contacts have a 0.1µFd 50V or higher capacitor connected between the leads of that input. In the case of multiple switches wired in a series or parallel connection to a single input, only one capacitor is needed.

The Fault Relay can be programed for one of 4 modes of operation using two programming jumpers each with two positions. J1 (jumper 1) has positions A and B while J3 has positions C and D. The four possible operation modes are:

1. When the power is off, the contact is closed. When the power is turned on, the contact may open momentarily while the unit does a self test then goes closed. The contact then goes open if that column faults out. The contact closes again if the power is shut off. Combination BD

2. When the power is off, the contact is open. When the power is turned on, the contact may close momentarily while the unit does a self test then goes open. The contact then goes closed if that column faults out. The contact opens again if the power is shut off. Combination BC

3. When the power is off, the contact is closed. When the power is turned on, the contact changes to open. The contact then goes closed if that column faults out or the power shuts off. Combination AD

4. When the power is off, the contact is open. When the power is turned on, the contact changes to closed. The contact then goes open if that column faults out or the power shuts off. Combination AC

Mode 3 is the most popular one and the one used on all orders unless another mode is requested. The operational mode can be changed in the field by removing the side panel adjacent to the orange Phoexix connector and changing the jumpers on the Fault Relay PC board.

INSTALLATION

General Information

Your Iconyx column array was designed to be easy to install on either a flat surface such as a wall or suspended from a ceiling. Note that it was not designed to be mounted in the wall or in an alcove. The amplifers are convection cooled and their heat sinks require at least an inch of separation from the nearest surface.

Optional hinge kits allow wall mounted column arrays to be rotated 90 degrees away from the wall to provide easy access to the rear access ports during installation and for routine testing and service. They also provide the separation needed for cooling.

The actual installation should be made either by or under the close supervision of someone experienced in installation techniques and rigging.

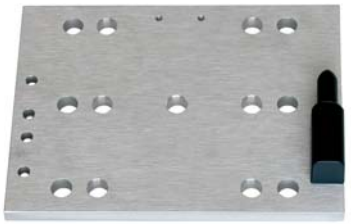
WALL MOUNTING

The following instructions assume that the column array(s) will be mounted using Renkus-Heinz HK series hinge kits.

Unless the hinge kits were ordered separately from the column array(s) the female hinge sections and mounting plates will already be attached to the column array.

Notice that each mounting plate has hinge sections on both the right and left side of the plate to provide for either “right” or “left” swing away from the wall. IC8, IC16 and IC16/8 column arrays will have two hinge sections; IC 24, IC32 and IC32/16 column arrays will have three hinge sections.

The wall mounting hinge plates have the male hinges mounted on the right side of the plates to provide for swinging the column array to the right away from the wall (see below). If you want the column array to swing to the left, you will need to change the location of the hinges to the left side.



Notice that one of the wall mounting hinge plates has a metal strap attached to it. This is the hinge plate that goes on the bottom. The metal strap attaches to the bottom of the array after it is hung and keeps the column array from turning.

If you have one of the larger IC24, IC32 or IC32/16 column arrays with three hinge sections you may want to verify that the center hinges are in the best location for your installation. They can be moved by removing the joining plate from the array assemby and then removing the hinge sections from the plate and installing them in a different location.

To assist you in attaching the wall mounting hinge sections a dimensional drawing showing the hinge locations and several paper mounting templates were shipped with the column array. Its usually easier to tape the paper templates to the wall while marking the hole locations than it is to hold the actual mounting plates in place while marking.

> Hint: To simplify the mounting many installers will first cut a “backing plate” the size of the column out of heavy plywood and mount the hinge plates on it. It’s a lot easier to align the hinge sections on a piece of plywood than it is on the wall. Then, when the aligment is perfect they mount the “backing plate” to the wall. After that, it’s usually a comparatively easy task to hang the column array on the backing plate.

After the column array is hung on the wall, remove the machine crew from the bottom end cap and use it to attach the restraining strap.

SUSPENSION MOUNTING (FLYING)

The end caps of the column array are attached to the main frame with four metric M6 machine screws. Removing these screws and replacing them with eye bolts provides up to four attachment points for flying. We recommend using all four. If only 2 are used the column will not hang straight. It will either tilt up or down.

FINAL CONNECTIONS

All that is left to do is to connect the column array to the system wiring. Remove the access plate from the connection port, remove one or more of the “knockouts” from the access plate, run the power, audio and digital control cables through the access plate and connect them. Don’t forget to use appropriate cable bushings in the access plate to protect the cables from damage.

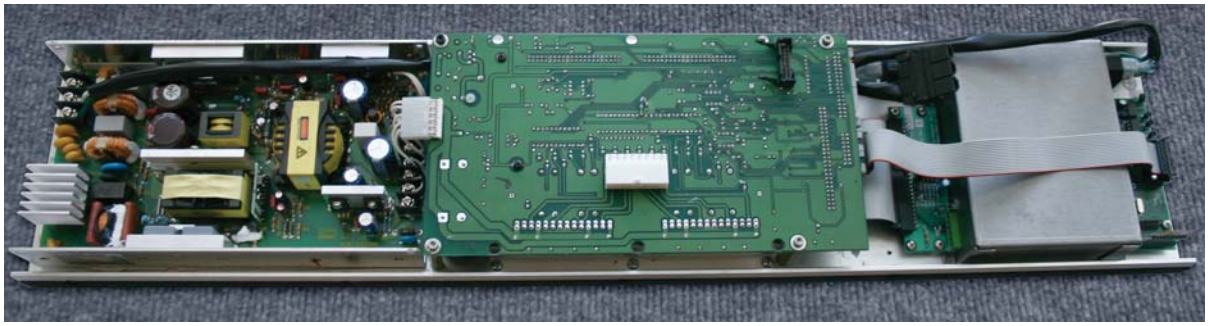
SERVICING

GENERAL INFORMATION

Your Iconyx steerable column array contains no user-serviceable parts and all service should be referred to qualified service personnel.

Great care was taken in its design, however, to allow it to be serviced in the field without being removed from its mounting position. The tranducers can be replaced from the front of the column by removing the grille to expose the transducers and their mounting screws.

The 8-channel digital amplifier/DSP and associated power supply that is the heart of each 8-channel module is one single assembly (see below) that can easily be taken out and replaced by removing the module's side panels.



TROUBLE SHOOTING HINTS

HUM

The most common sources of system hum are the program source or an improper or poor ground on the audio signal line. Check the program souce to make sure the hum isn't originating there. Carefully check all the audio connections to make sure they are properly made.

NOISE

Most noise problems are the result of improper grounding or of noise being induced into the system from adjacent noise sources, such as fluorescent lights, and close proximity of the audio signal lines to lines radiating noise. Carefully review all the audio connections and turn off all the lights and any other suspected noise sources.

SUSPECTED TRANSDUCER FAILURE

Defective transducers are hard to locate in steerable column arrays because the transducers are so close together. If one is bad, it's hard to tell which one it is. The digital steering also reduces the drive to some of the tranducers making it difficult to determine if a certain transducer has failed or is just being driven at a much lower level than other transducers.

The best way to check is probably to remove the grille from the module and use your fingertips to feel for cone vibrations while music is being played through the system.

Be aware that no movement of the cone of a transducer is not positive proof that the transducer is bad. It could be that its associated amplifier has failed or that the beam steering is limiting the drive to the transducer or restricting its use to a narrow frequency band.

MODULE / COLUMN ARRAY FAILURE (NO SOUND)

When a complete column array stops working, the first thing to verify is whether the column array is still receiving AC power and audio signal.

The presence of AC power can be verified by removing the access panel. If the green power LED isn't lit, either the circuit breaker has tripped or the column array is no longer receiving power. Reset the circuit breaker to see if this cures the problem. If it doesn't or if the power comes on for only a brief period of time and then goes out again, either the power supply or the amplifier section has probably failed. Don't continue to reset the circuit breaker as this may cause further damage to the power supply/amplifier.

We recommend replacing the entire power supply/amplifier assembly, instead of trying to troubleshoot the assembly in the field.

If AC power is present and the circuit breaker has not tripped, either audio is not reaching the column array or the power supply/amplifier has failed. If audio is reaching the column, we recommend replacing the entire power supply/amplifier assembly, instead of trying to troubleshoot the assembly in the field.

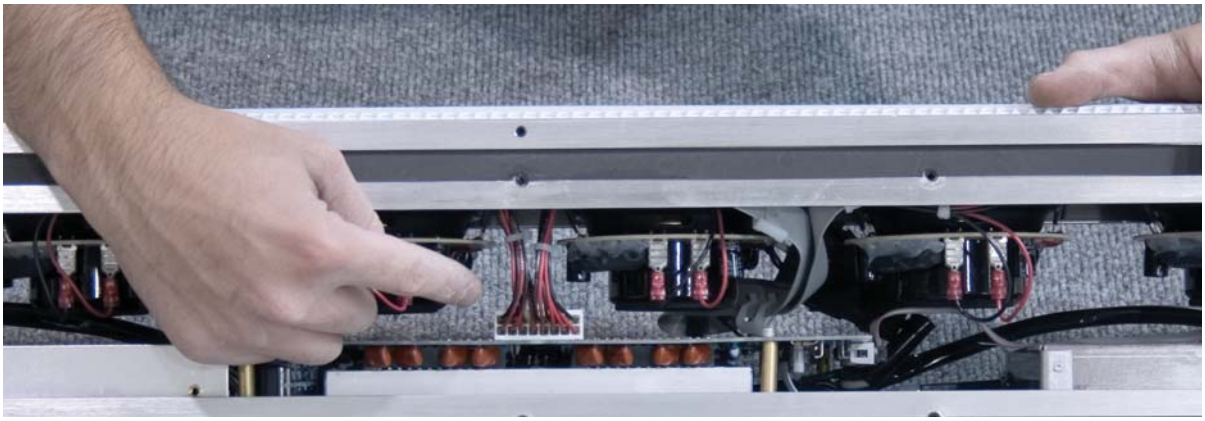
To replace the power supply/amplifier assembly:

1. Make sure that power to the column array is turned off.

2. Remove both side panels from the non-functioning module.

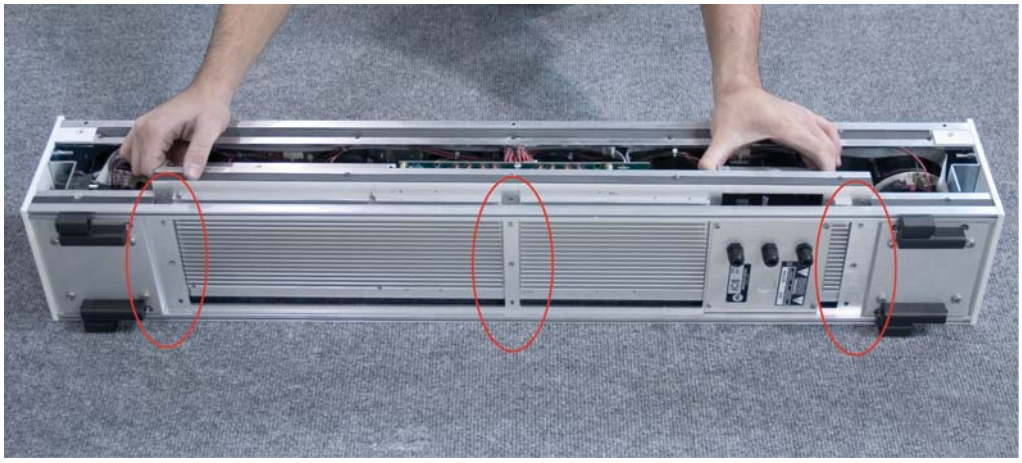
3. Disconnect (unplug) the module from the signal buss line. See below.

4. Disconnect (unplug) the module from the output buss line.

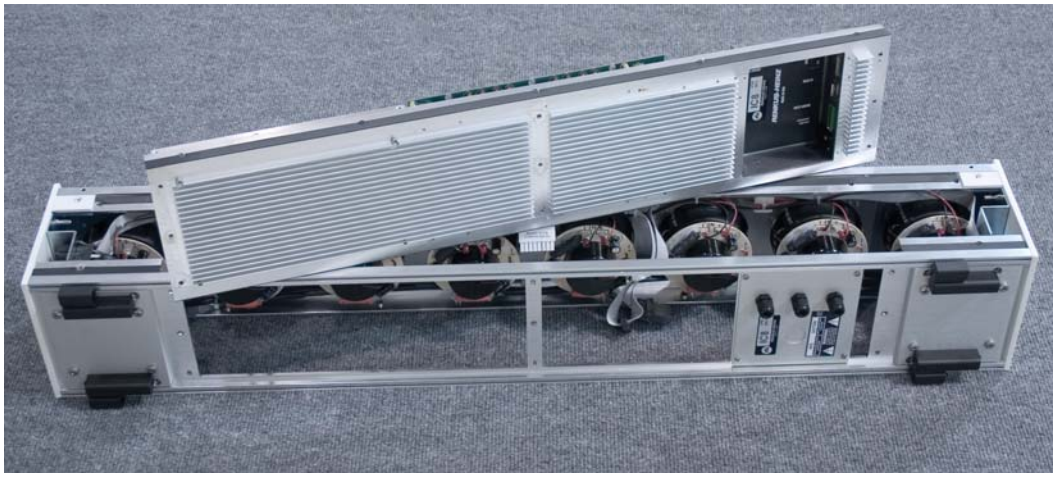


5. Disconnect (unplug) the module from the AC power buss line.

6. Remove the 9 machine screws that secure the power supply/amplifier assembly to the frame. Three are located above the heat sink, three are located below and three are located near the center of the heat sink. See below. note that when the array module is mounted on the wall, you will first need to rotate it 90 degrees to gain access to the screws.



7. Move the assembly slightly toward the top of the module and then carefully lift the assembly out through the side of the cabinet. Note that when the array module is mounted on the wall, you will need to lift the assembly up slightly before sliding it out.



8. Reverse the procedure to install the replacement assembly.

9. Set the address dip switches of the new assemby to the same address as the assembly being replaced.

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